Gas Journal

Vol. 268. 103rd Year. LONDON, DECEMBER 19, 1951. No. 4620. Price 1/3

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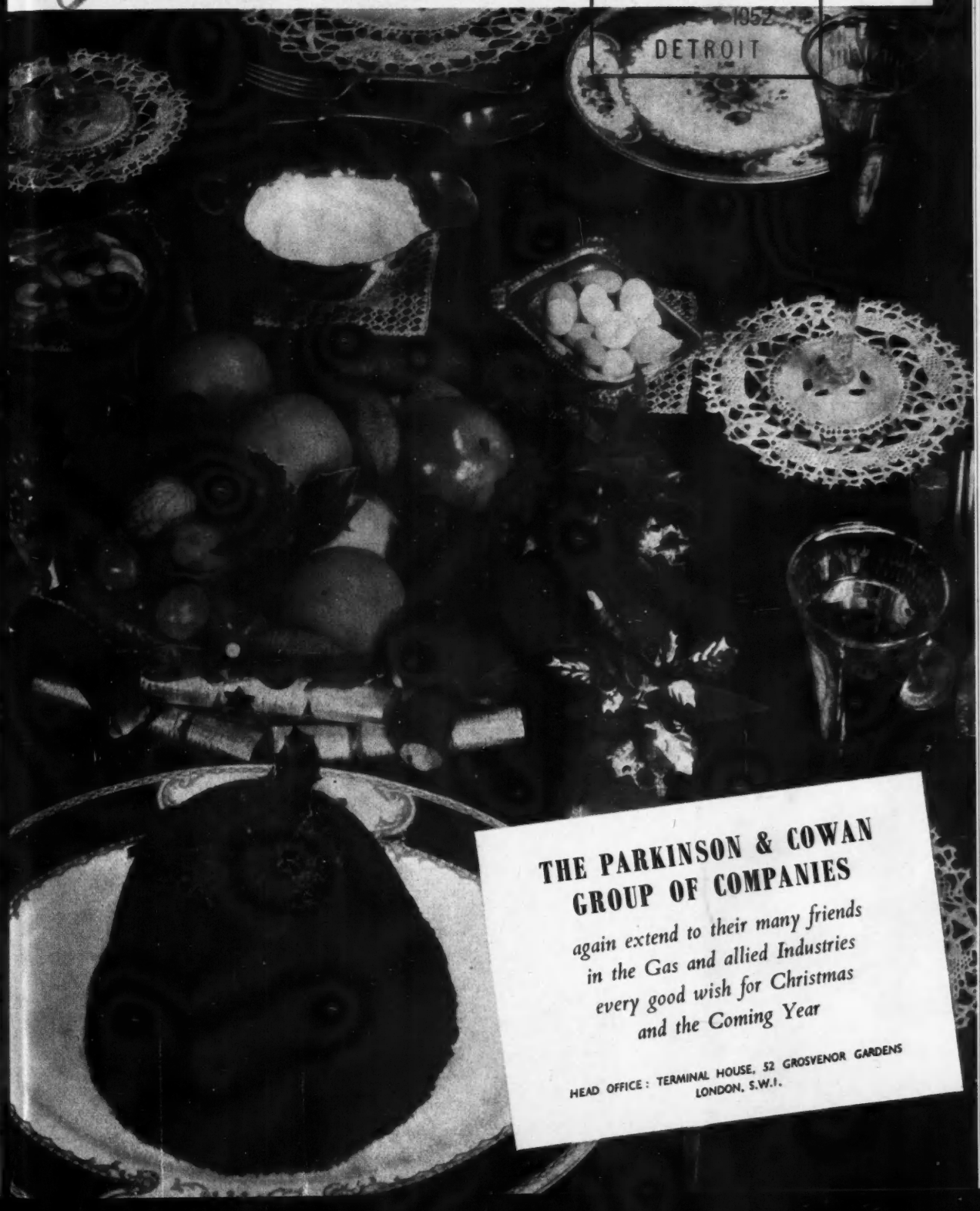
DETROIT



THE PARKINSON & COWAN GROUP OF COMPANIES

again extend to their many friends in the Gas and allied Industries every good wish for Christmas and the Coming Year

HEAD OFFICE: TERMINAL HOUSE, 52 GROSVENOR GARDENS LONDON, S.W.1.

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MILNE'S METERS LTD, EDINBURGH & LEEDS

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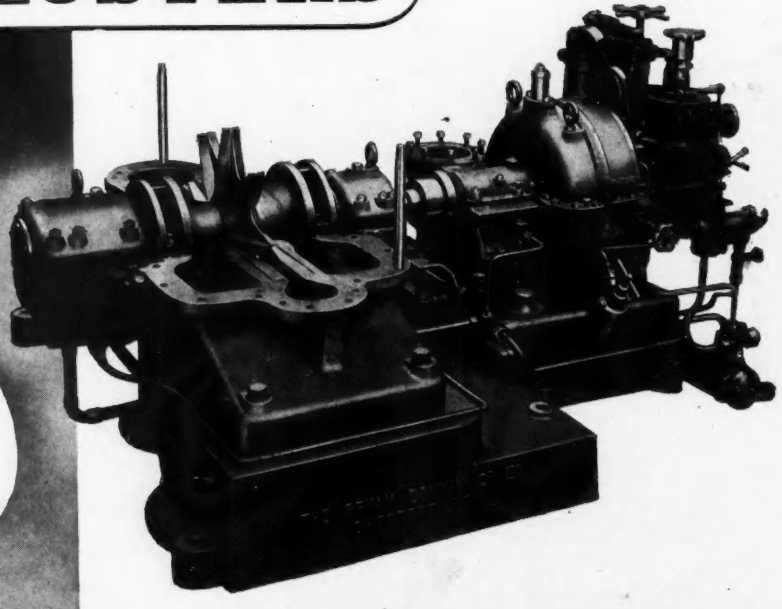

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Double Inlet Star Type-Fan. Capacity 10,000,000 cubic feet of Gas per day, against 72" W.G. running at 8,700 revs. per minute driven by Steam Turbine. Dimensions 6' wide 8' long, 4' high.

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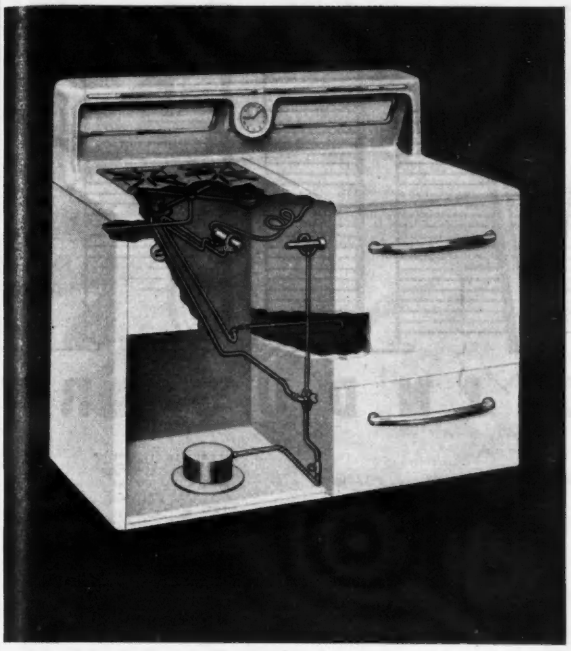

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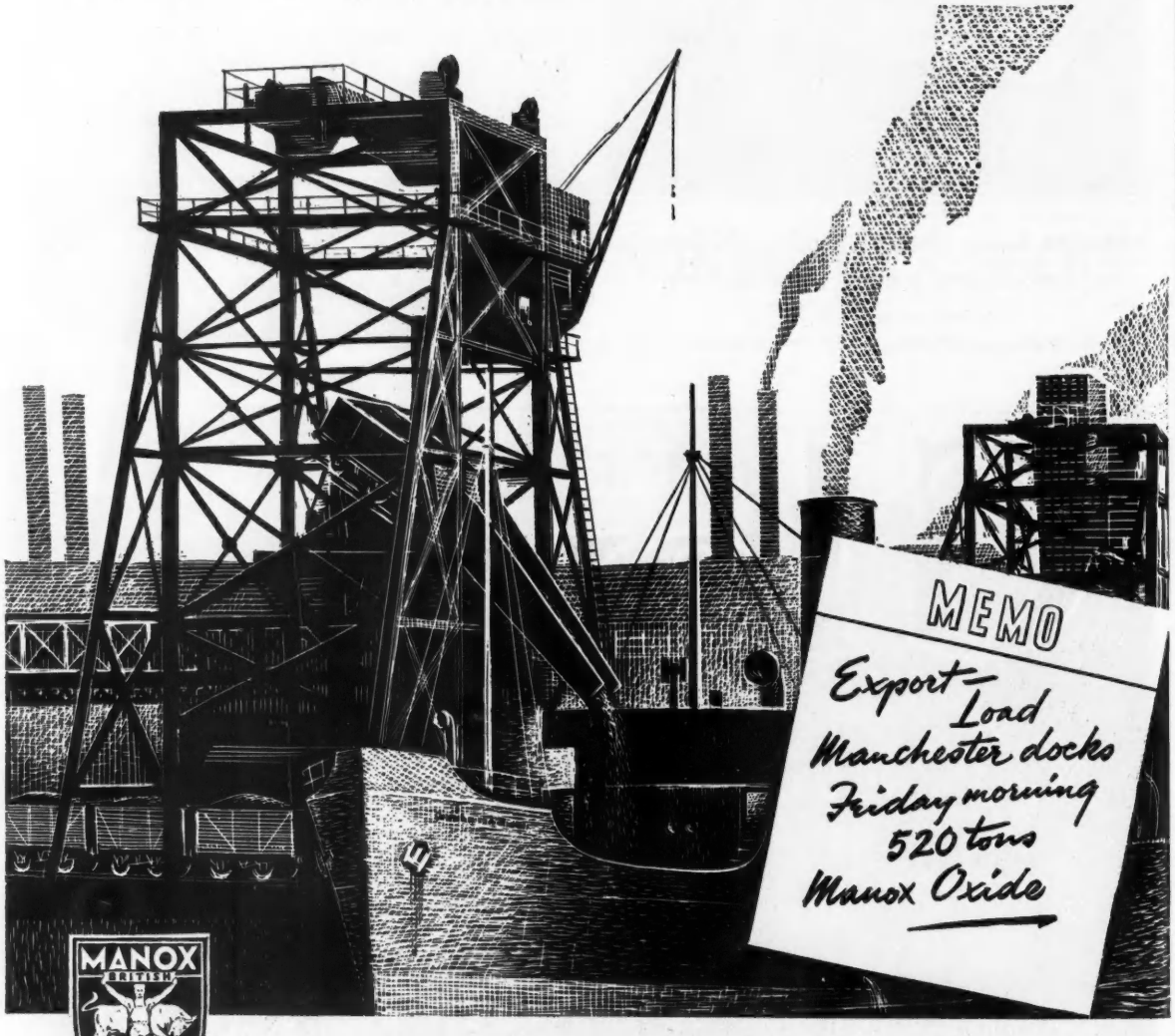

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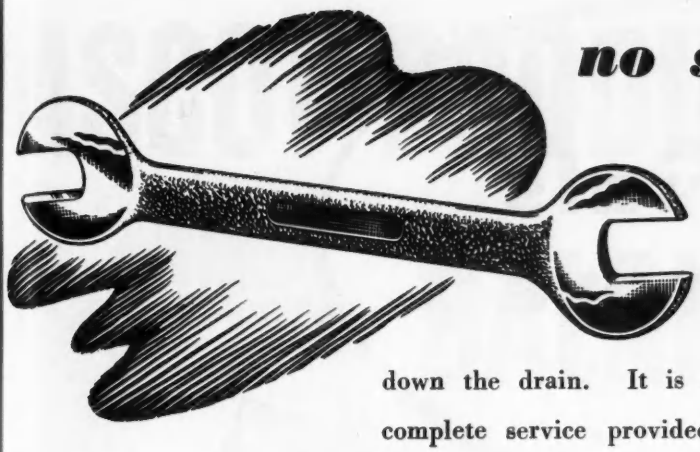

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can be as awkward as dropping a spanner in the works. Without the right tools for the job, money goes down the drain. It is much better, and easier, to use the complete service provided by Abbott, Birks & Co. Ltd. and buy all your tools and equipment from one source.

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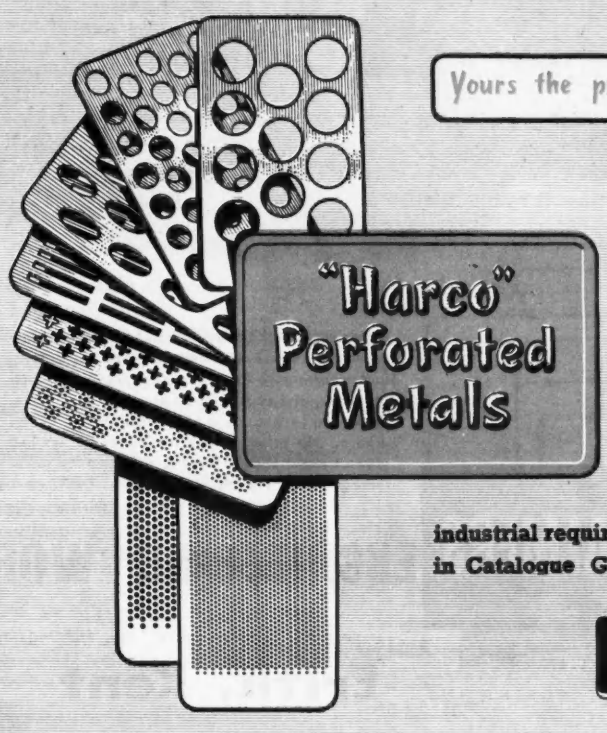

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WHENEVER it is a question of "where-to-get" Perforated Metal—remember Harveys. Because Harveys have been making perforated metal screens for every conceivable purpose in every kind of metal for over 70 years. There is available a perforation to meet all normal industrial requirements. Fuller details are available in Catalogue G.J. 782.

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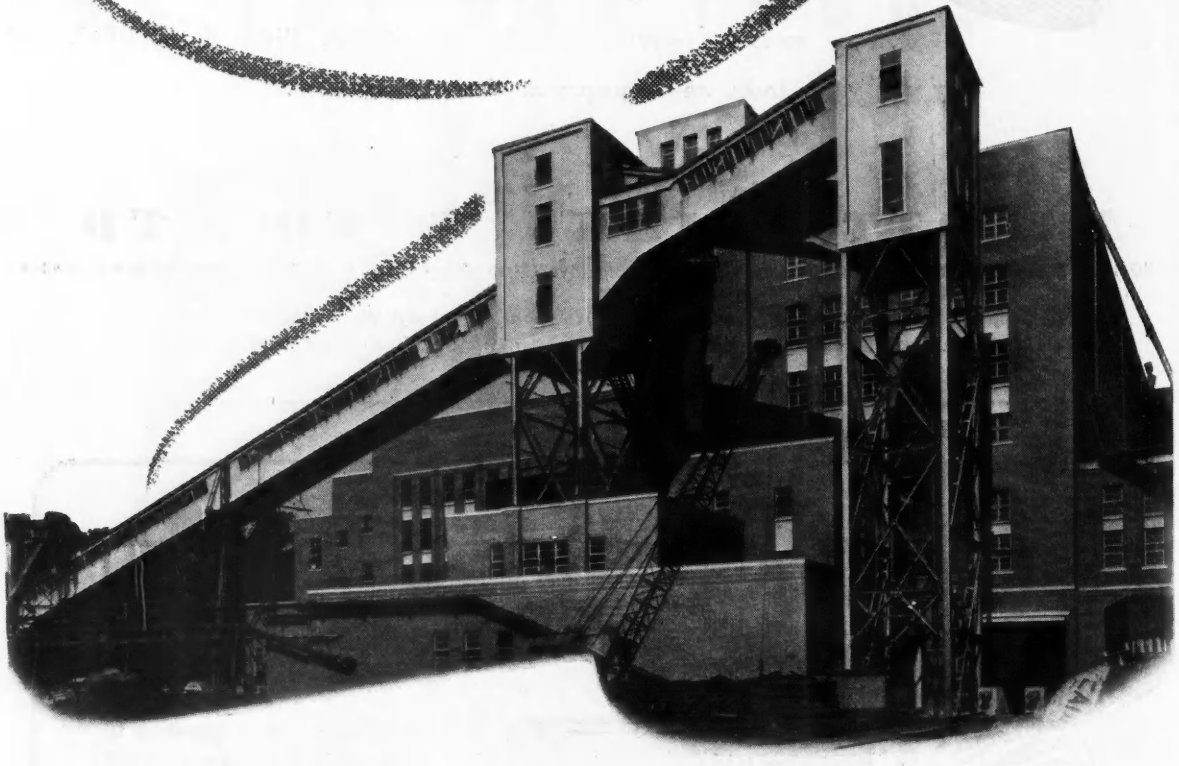

Complete Handling Plants designed and manufactured by Fraser & Chalmers Engineering Works, incorporating the Robins' system, are in operation in mines, collieries, power stations, gas works, docks and harbours and all types of factory everywhere. No other British manufacturer has had greater experience in solving the handling problems of vital heavy industries.

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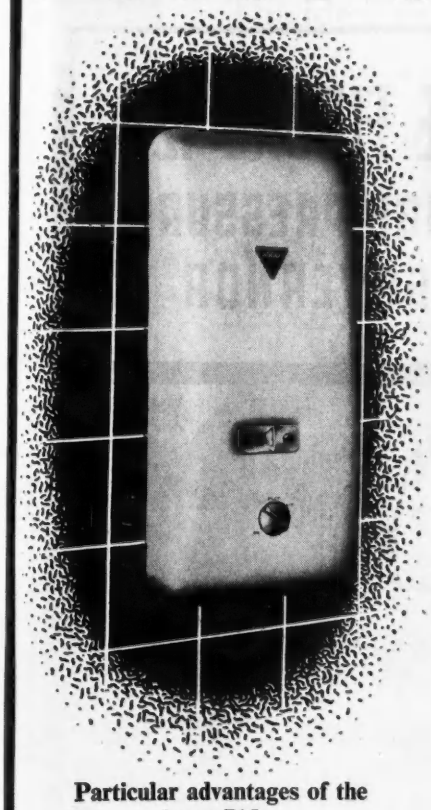
28

ASCOT PRODUCE FIRST BALANCED FLUE WATER HEATER



The new Ascot 715 multipoint is the first balanced flue gas water heater to go into production anywhere in the world. Once again Ascot leads the way! Once again Ascot helps the gas industry to maintain the position of gas as the best and most economical fuel for providing an instant, endless supply of hot water!

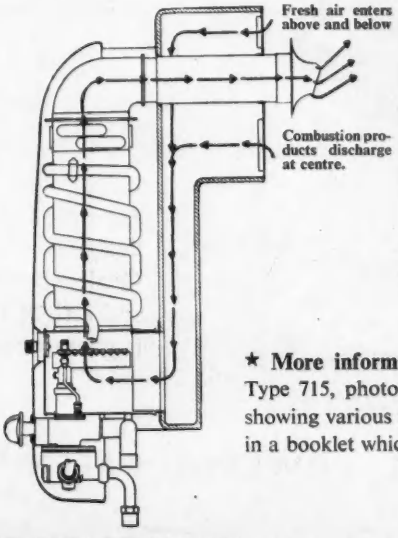
THE NEW ASCOT 715 is fundamentally different from any other water heater. The combustion chamber and flue are sealed off from the room in which the heater is installed. Enclosed ducts draw air to burn the gas from outside the building and carry away all the products of combustion.

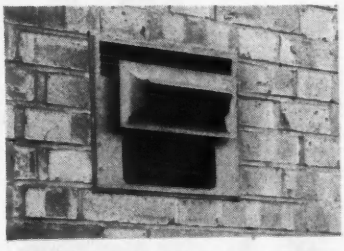
A FULL INSTANTANEOUS MULTIPOINT SERVICE *similar to that of the popular Ascot 709 is given by the 715. It also has a stainless steel burner which has proved so successful in resisting corrosion and maintaining a high standard of efficiency.*

Particular advantages of the Ascot 715

1. Combustion chamber and flue sealed from the room. Vitiation of air in the room is absolutely impossible. No down-draughts.
2. Handsome but unobtrusive. Projects only 5 inches. No visible flue.
3. Can be fitted in a cupboard without regard to ventilation.
4. Ideal for multi-storied buildings. Can be installed on any outside wall even though the terminal may be in proximity to overhanging, or other projections.
5. Installation is simple. Full advantage can be taken of service ducts.
6. Smooth contours and hard enamel make cleaning easy. No crevices or dust traps. Particles cannot drop from the heater.

Supplies. As many municipalities have specified the 715 for their housing projects the needs of new buildings must have priority.





The terminal can be fitted even in proximity to overhanging, or other projections. There is no flue pipe or cowl.

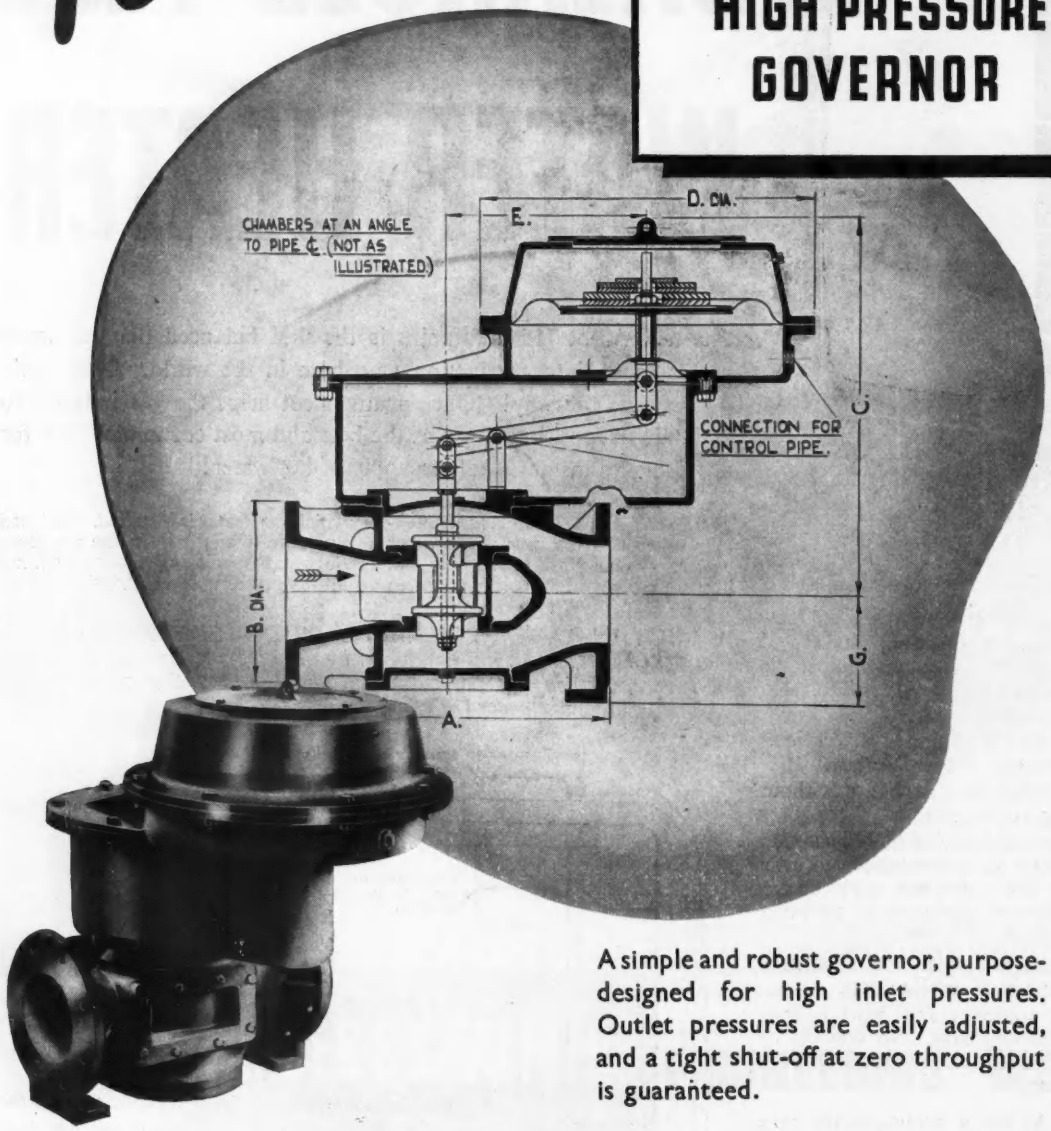
★ **More information.** A detailed explanation of the Type 715, photographs, a specification and drawings showing various methods of installation, are contained in a booklet which will be sent on request.

ASCOT

ASCOT GAS WATER HEATERS LTD., 43 Park Street, London, W.1. Grosvenor 4491

Peebles & CO. LTD.

THE FIGURE 124
HIGH PRESSURE GOVERNOR



A simple and robust governor, purpose-designed for high inlet pressures. Outlet pressures are easily adjusted, and a tight shut-off at zero throughput is guaranteed.

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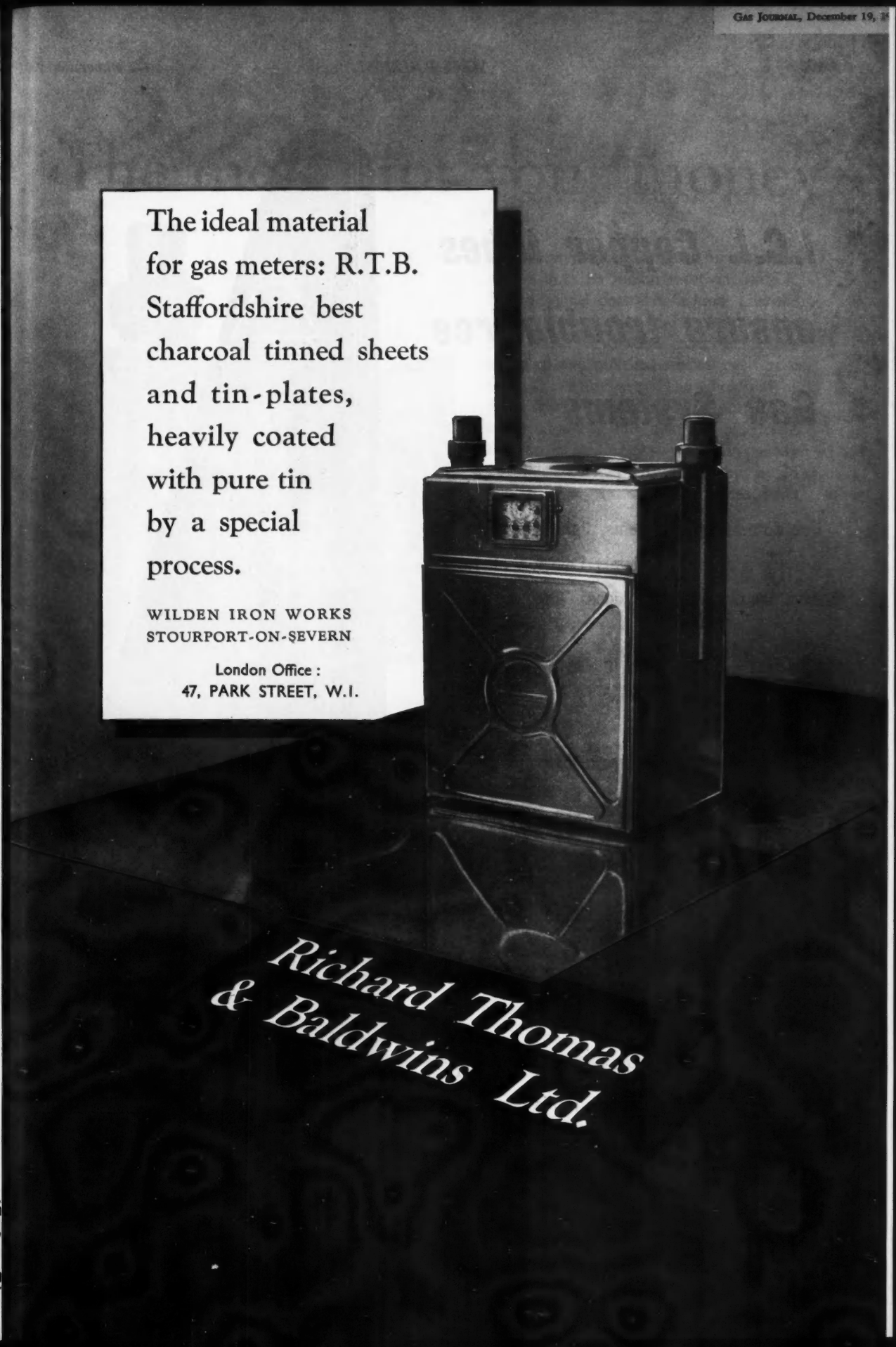
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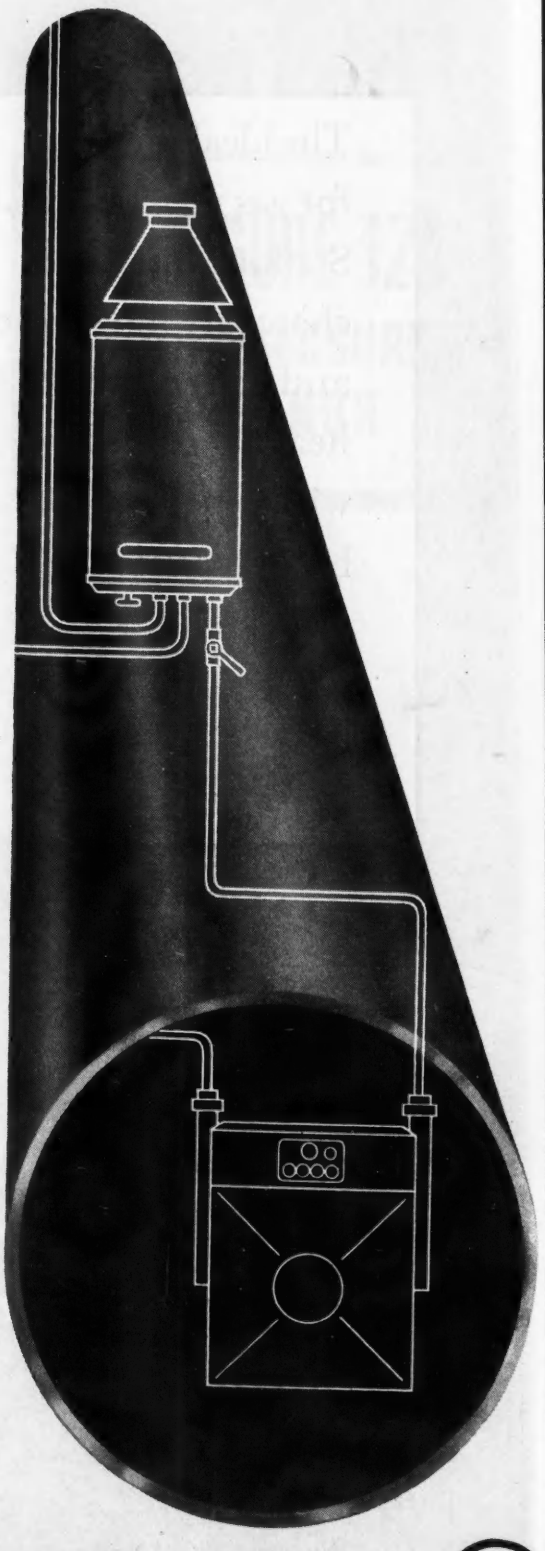

For domestic gas systems, light gauge copper tubes made by the Metals Division of I.C.I. have five obvious advantages. They are:—

1 **Economical, both in laying costs and maintenance.**

2 **Not attacked by normal town gas.**

3 **Easily manipulated and installed.**

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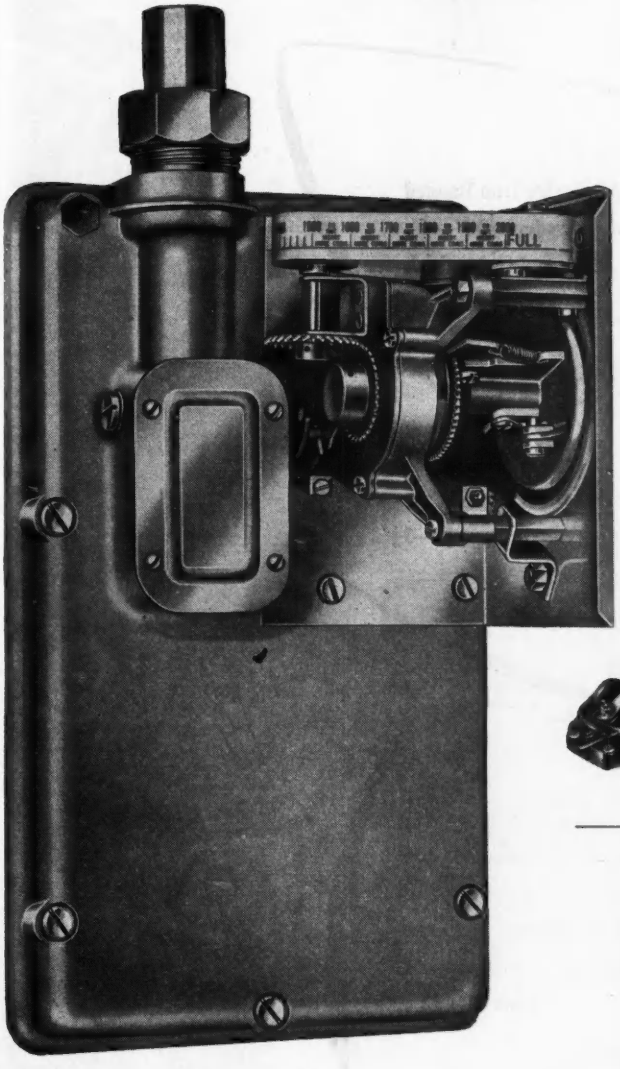
IMPERIAL CHEMICAL INDUSTRIES LTD LONDON SW1

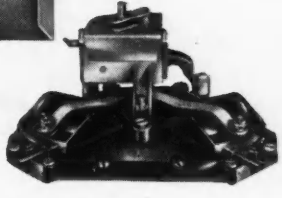
Fittings for copper tubes are made by Fyffe & Co. Ltd., Dundee, a subsidiary company of I.C.I. Ltd.

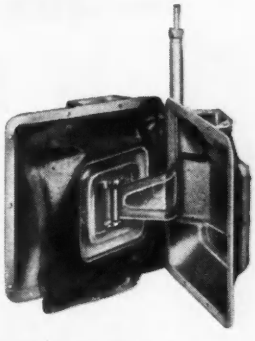
M.184

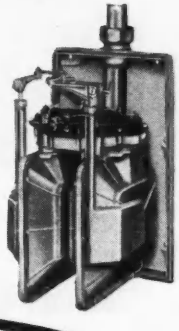
The meter for your money

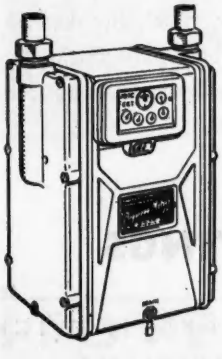


The prepayment attachment for Begwaco meters does its job in most efficient, in fact in typical Begwaco, fashion. Like the meter, it is built throughout of aluminium alloy. The coin-wheel and bezel are anodised and polished die-castings whose finish defies any wear. The whole unit is made readily detachable to simplify maintenance, whilst the quantity of gas it releases per shilling or sixpence can quickly be adjusted as desired. Finally, but by no means least, the mechanism has been made fraud-proof.









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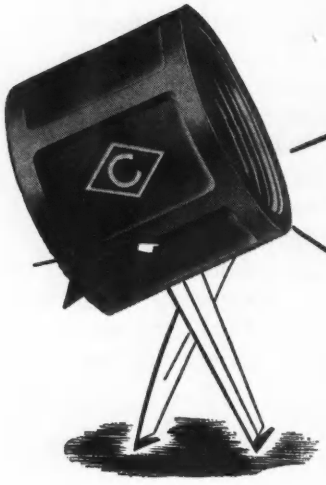
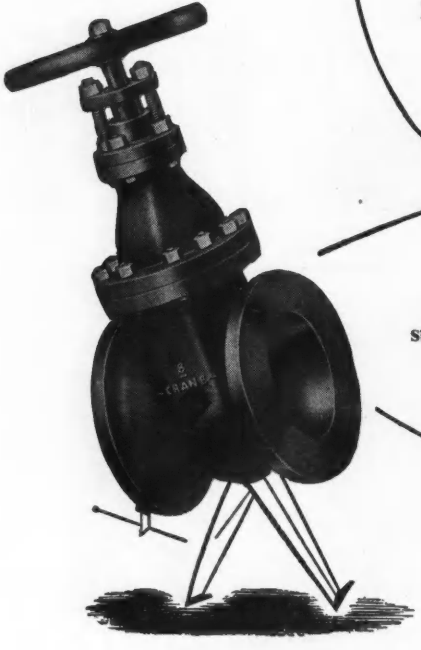
M.184

CRANE ON PARADE



Crane Malleable Iron Banded Socket—Sizes: (equal and reducing) ¼"—6". Black and Galvanised.

Crane Malleable Iron Strapped Drop Elbow. Sizes: ¼"—1¼". Black and Galvanised.



Crane Cast Iron Gate Valve. Wedge Gate—non-rising stem or outside screw and yoke. Gun Metal wearing parts. Screwed ends. 2"—6" and flanged ends 2"—12".

Just three items selected from the Crane lists, which give details of Malleable Iron Plain and Banded Pipe Fittings for all purposes. Made to British Standard Dimensions—individually tested—taper threads. Also a wide range of Cast Iron and Gun Metal Valves.

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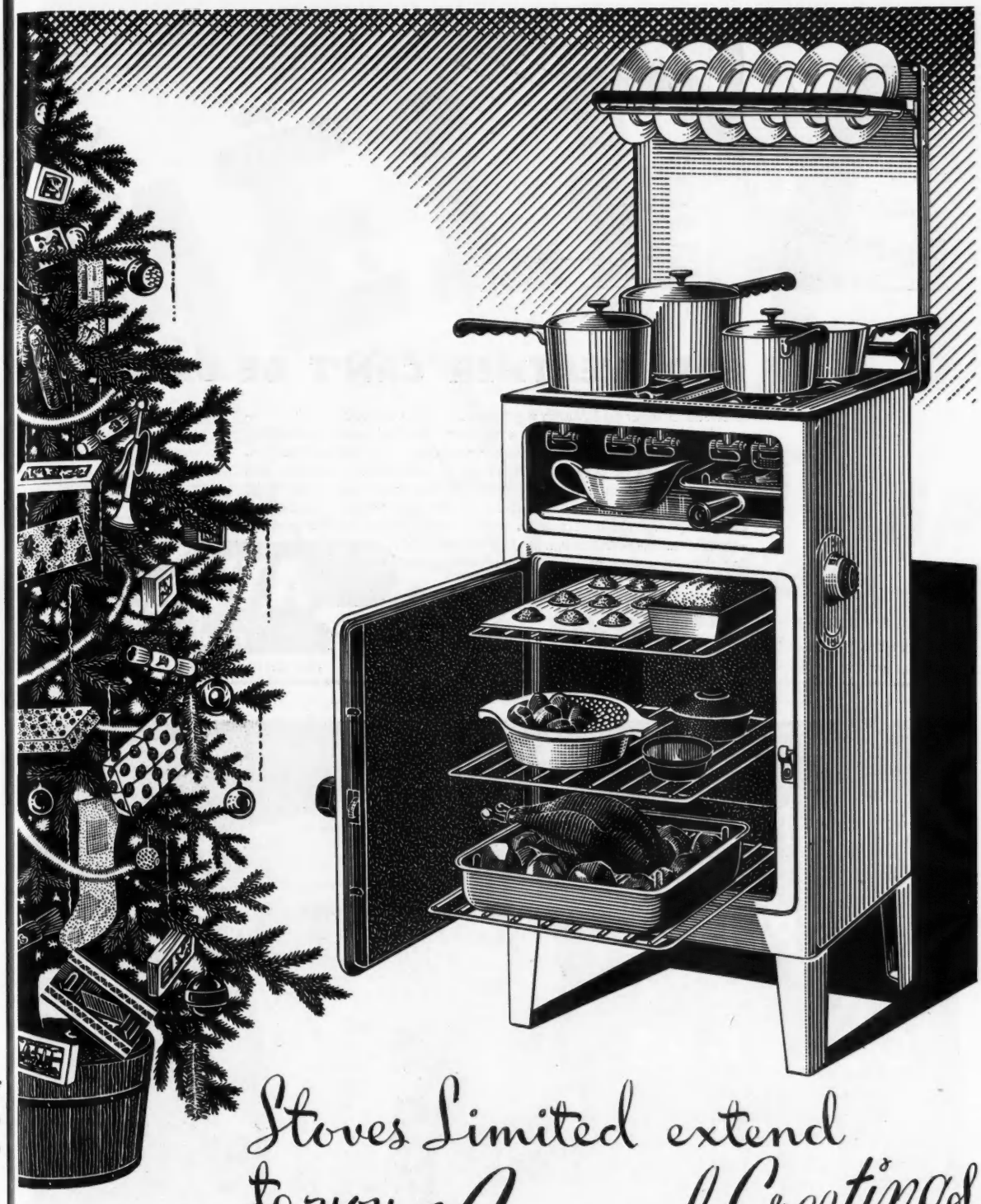

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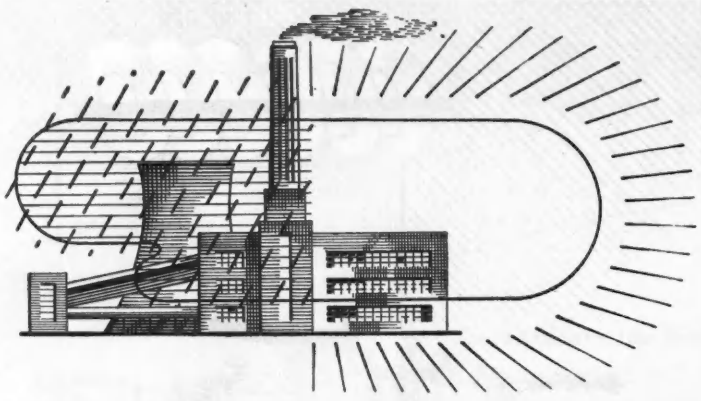

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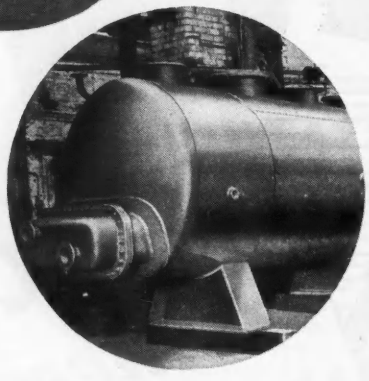

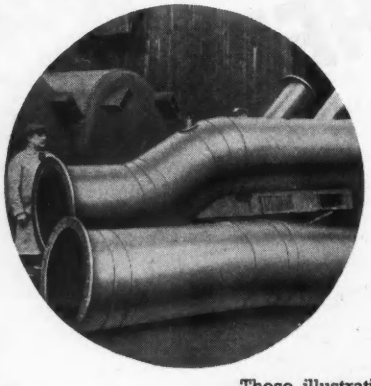

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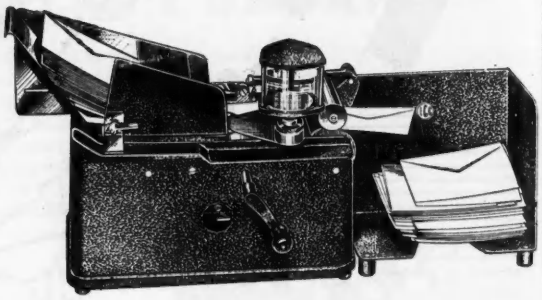

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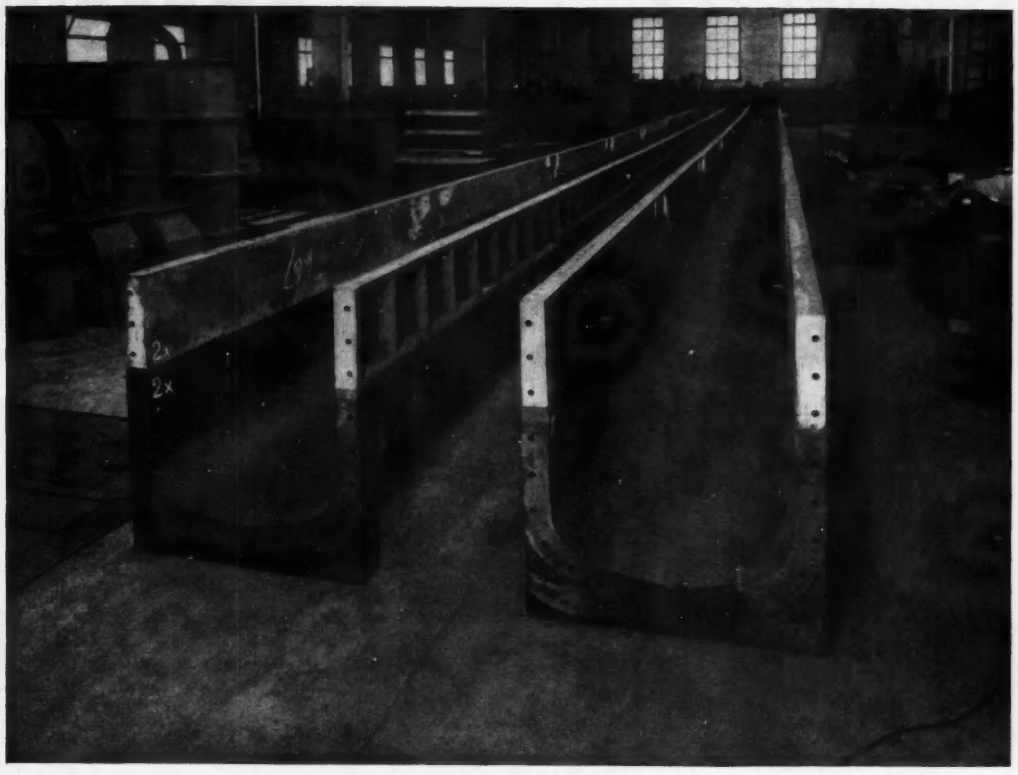

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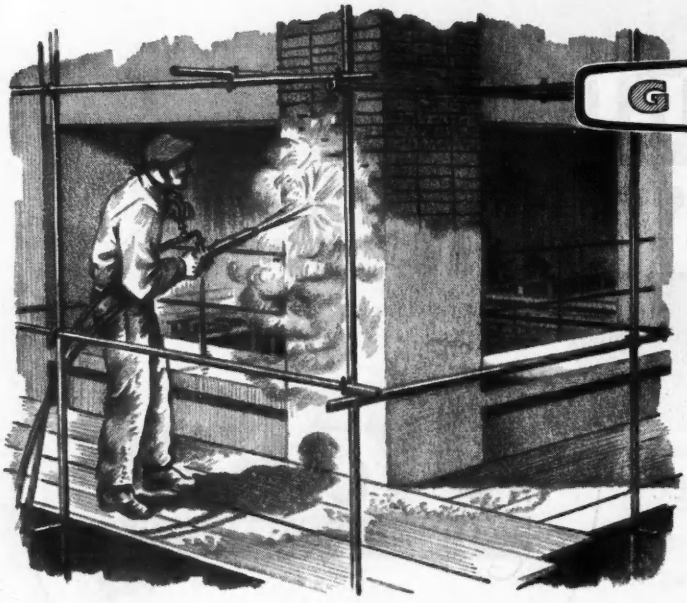

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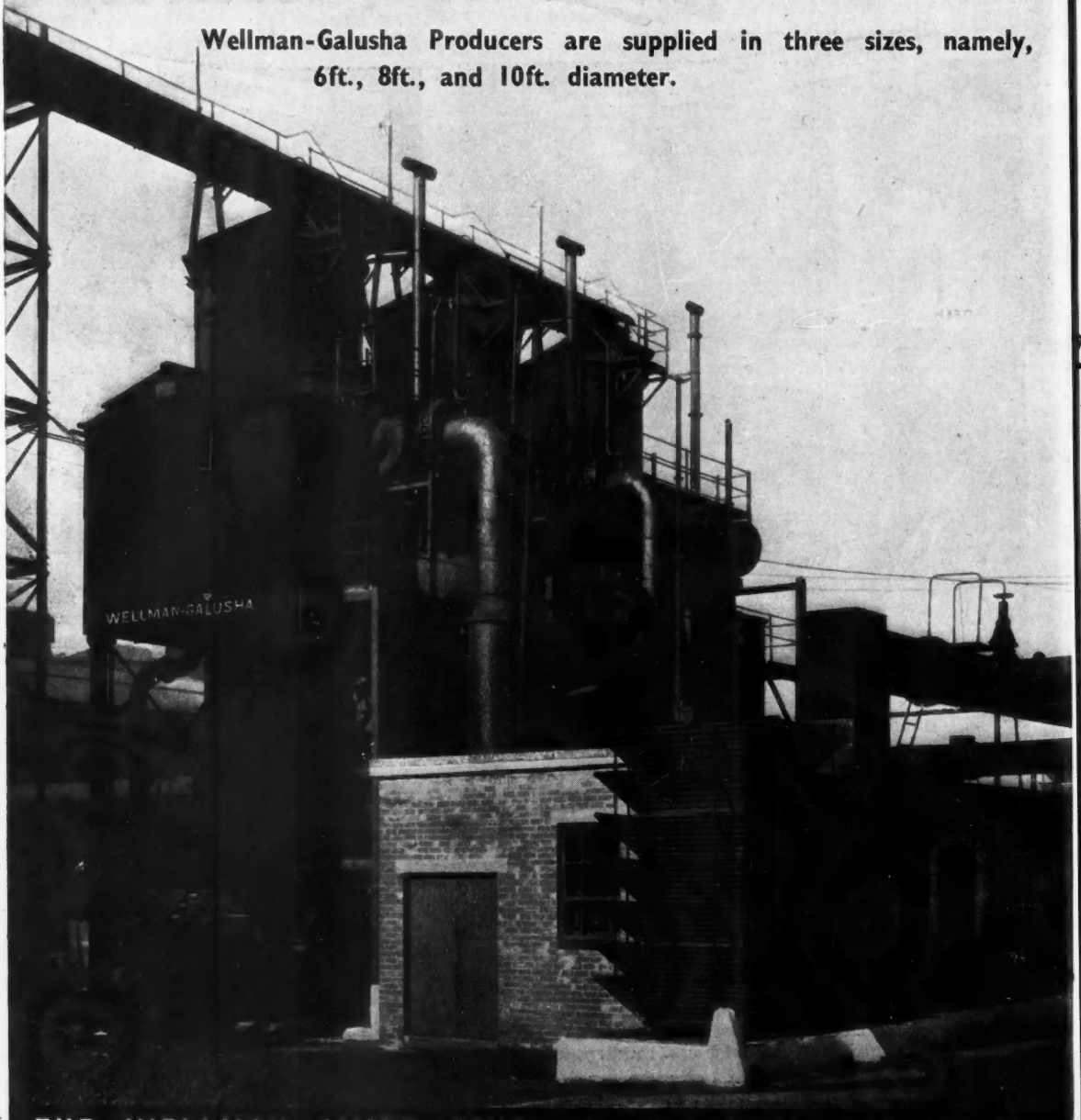

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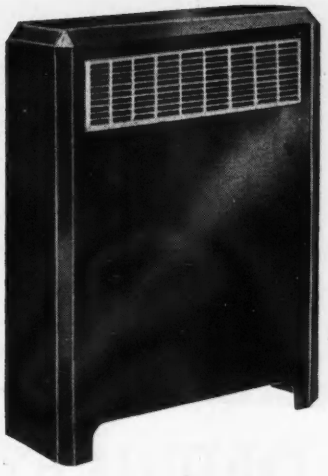

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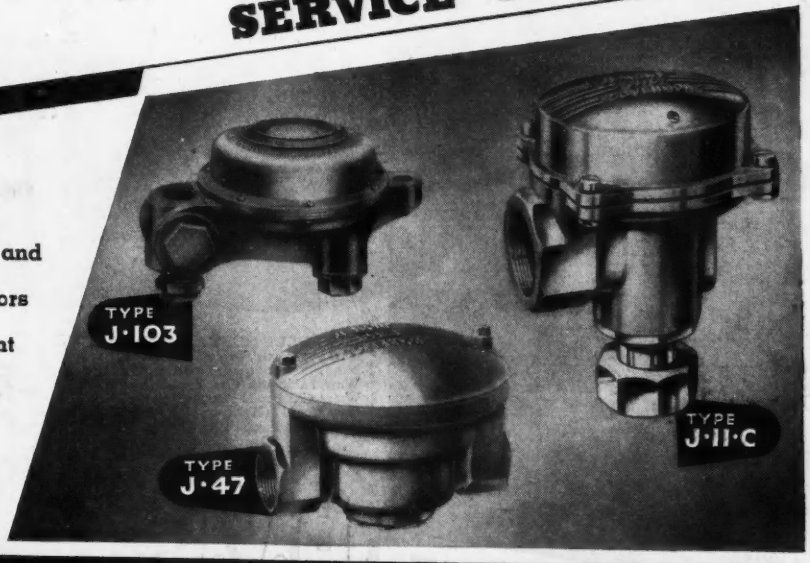

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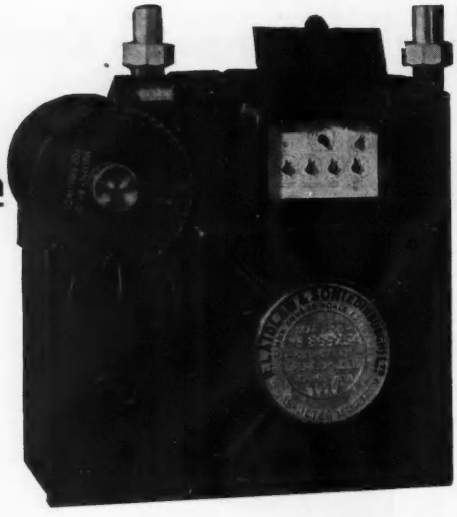

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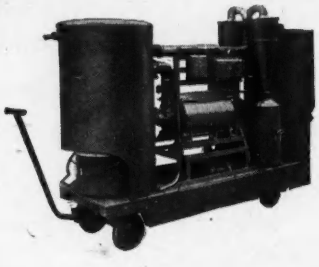

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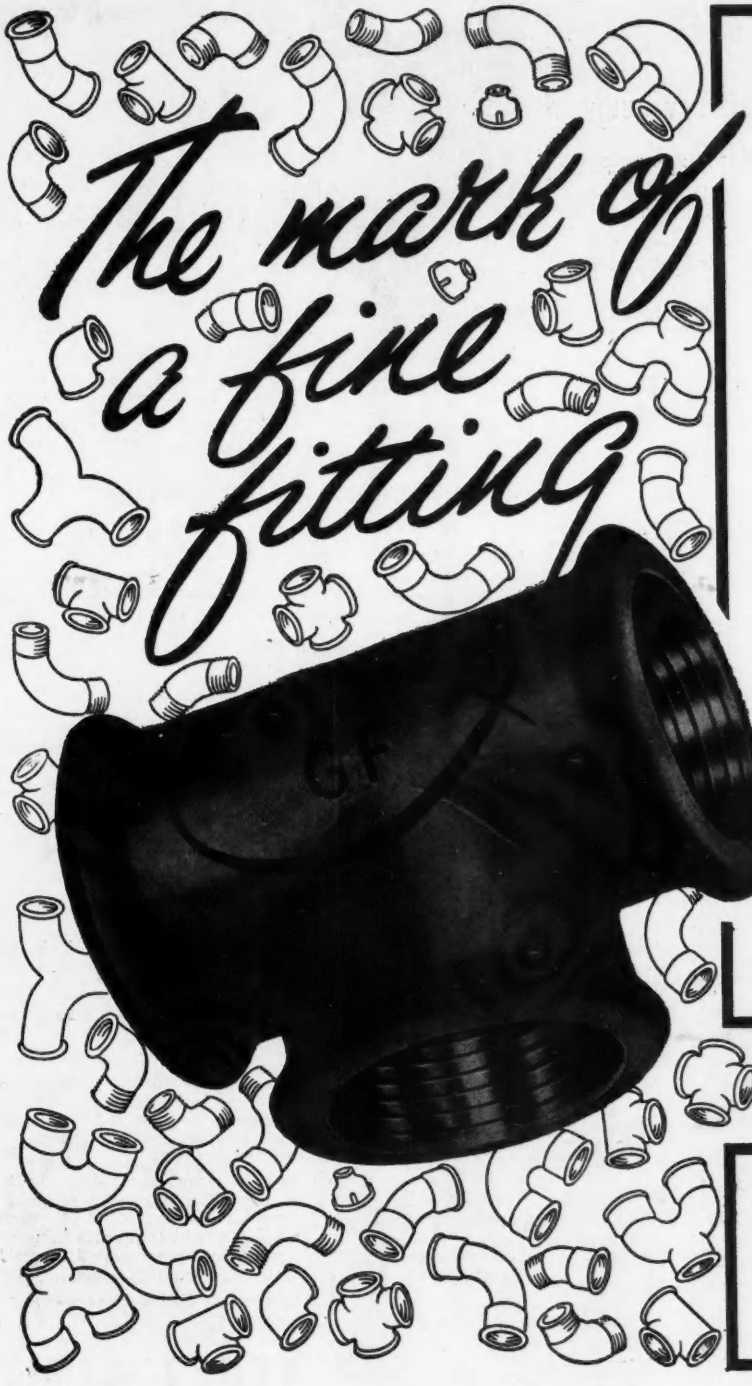

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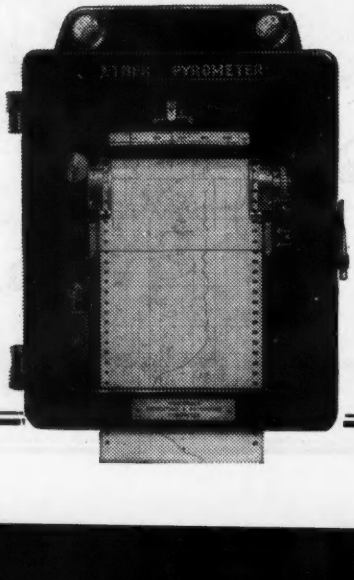

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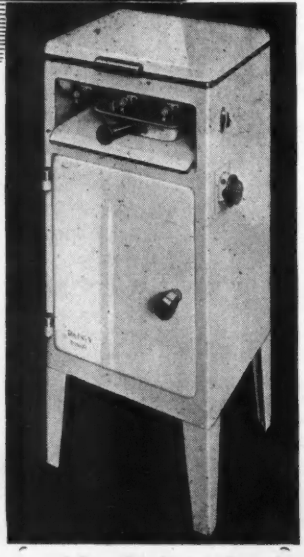

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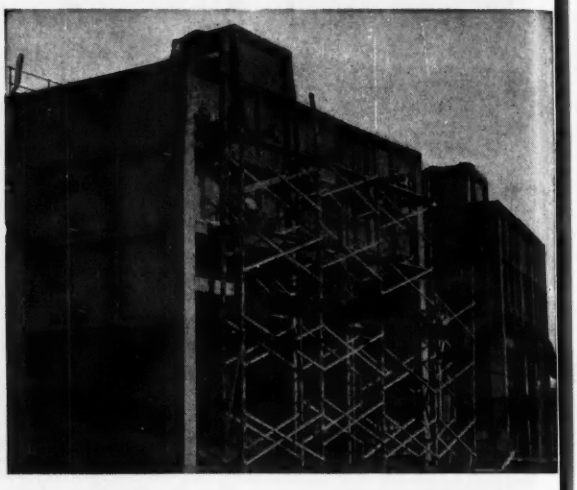

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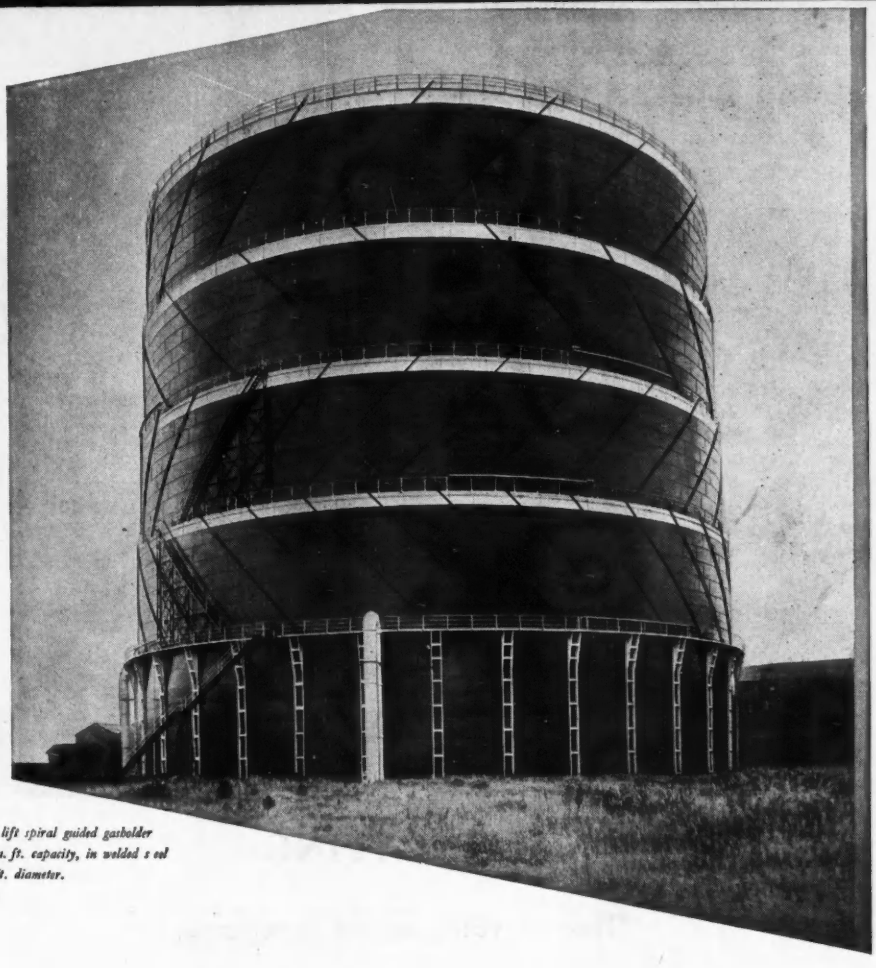

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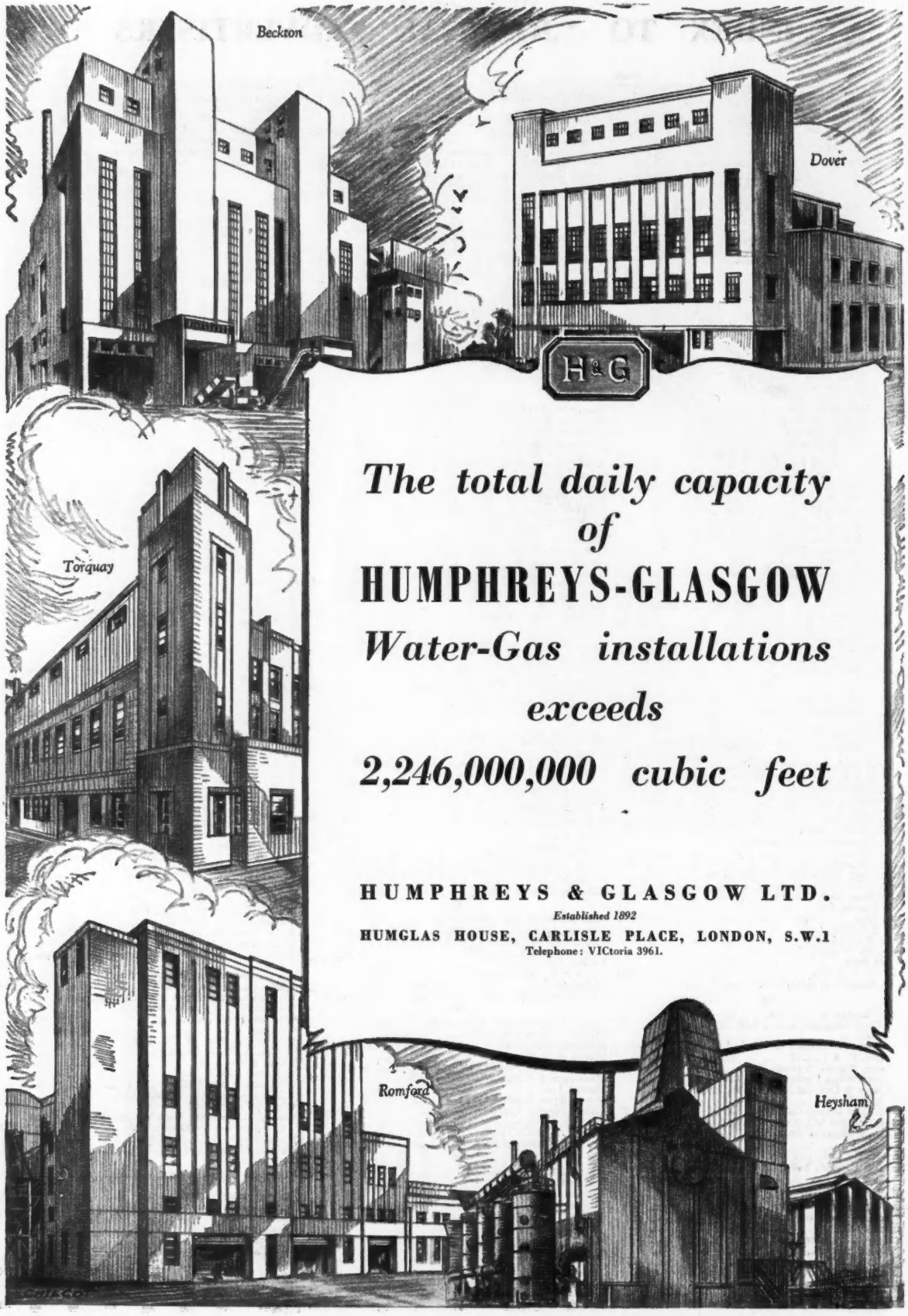

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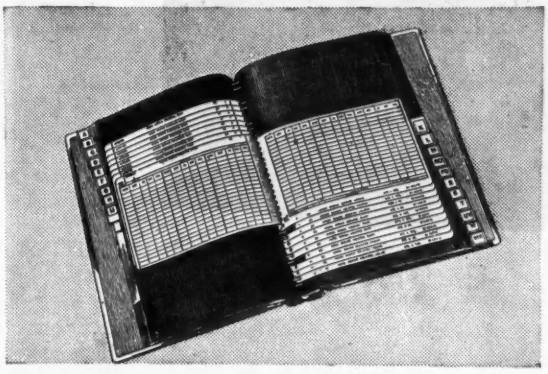

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Gas Journal

103rd YEAR OF PUBLICATION

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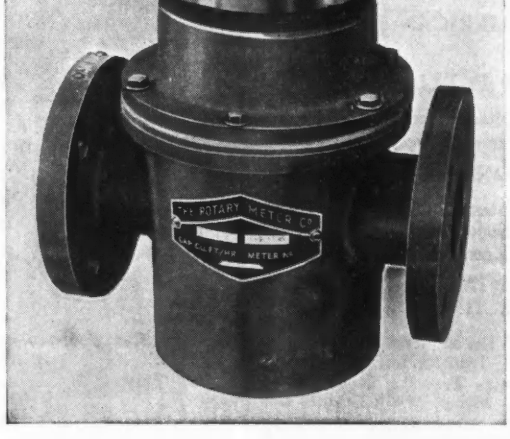

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GAS JOURNAL

VOL. 268. NO. 4620 103RD YEAR DECEMBER 19, 1951

AN AMERICAN VISION

WHEN we think in terms of industrial productive capacity, do we simultaneously think of the part which electricity—and electricity alone—plays in speeding-up production? It is the view of Mr. Frederick Hess, President of the Gas Appliance Manufacturers' Association of America, that we have been 'educated' to channel our thoughts exclusively in this direction. The view was expressed in an address at the annual convention of the American Gas Association—an address quite out of the ordinary which we have read with relish and profit. Electrical power is, of course, essential to industrial output and in itself is to an extent—but only an extent—indicative of this output. In America, for example, the horsepower hours per capita in 1935 were 1,250; in 1950 they had grown to 3,451, an increase of 176%. In the United Kingdom the corresponding figures were 514 and 1,462—an increase of 184%. But industry depends on heat as well as on power. In the United States in 1935 the annual gas consumption per capita was 212 therms (seven times the British figure). During the past 15 years U.S. gas consumption per capita increased to 822 therms, or 287%—16 times British consumption per capita. These figures make one think. They show how gas is entering into national growth based on industrial production. America has the very great advantage of natural gas and liquid petroleum gas, but that does not alter the underlying conception of the rôle played by gas in industry. The scope for gas is enormous. Why is it that the public fail to associate the development of the gas industry with the growth of industry in general?

'The gas industry today,' said Mr. Hess, 'has assumed a major responsibility for the operation of our economic system. . . . It is indispensable for maintaining our production and our private and national standards of living.' It was from this premise that he urged vision in the development of the industry; and in this development 'normal growth' ought to be beside the point. The American gas industry is faced with a demand which it cannot supply, and this in spite of its natural gas resources. So Mr. Hess advocates far more extensive interconnection of pipelines than is at present envisaged. Concurrently there should be exploration of the possibility of auxiliary gas supply from the eastern half of the United States. What he has in mind is the construction of large gas plants near the coal reserves, treating coal and feeding the gas from coal into a nation-wide grid. The gas-from-coal plants would provide capacity to cope with demand at all times of the year. True, gas might cost more than it can at present be piped from Texas or Louisiana. 'But who would put a value on gas shut-offs and inadequate supply for existing demand, on goodwill or loss of it, or the ultimate cost of government or state regulations or restrictions.' And 'can we answer our pressing industrial problems without taking risks?' We quote to indicate the tenor of this far-seeing and courageous address by Mr. Hess, who looks ahead, in a country at present so dependent on natural gas, envisaging how gas could and must become more widely employed and the extent to which America may have to look to coal for gas production—and this in a country where good coal and plenty of water are available for the generation of electricity.

REFRACTORIES AND RESEARCH

LIKE so many of the papers presented to this year's research meeting of the Institution of Gas Engineers those on retorts and refractories mark the beginning and the beginning only of new lines of attack. The use of a radio-active tally to explore the travel of different parts of the charge through the continuous vertical retort is a refreshing addition to the weapons of research. That there are differences and irregularities in the descent of different parts of the travel is well known, but this is the first time that the investigator has been able to, as it were, plot the progress of several parts of the charge through the retort. It is not claimed that these investigations are any more than a beginning, the try-out of a method. It remains to be seen whether

so expensive and intricate a method is worth pursuing. True, it is said that even if one part of the charge does travel faster than another nothing can be done about it. But this must not be accepted as final. The charge may, and probably does, travel more evenly in a retort of one size and cross-section, with one type of coke extractor, one method of coal feed, than others. Is it worth while pursuing this technique to discover what is the optimum size, shape, and arrangement of coal feed and coke extraction?

It is well known, too, that a technique developed for one purpose may yield results not anticipated by the originators. One of the young contributors to the discussion has already suggested that a differential in the rates of absorption of radio-active emanations between coal and coke may lead to a more accurate exploration of the position of the dividing line between coal and coke in the retort. To some extent the configuration of the 'coal cone' has been explored in some quite early thermocouple explorations. It would be interesting if the radio-active tally should throw further light on this.

Pride of place in the 42nd Report of the Refractory Materials Joint Committee is taken by the very interesting 'Movement Survey' of a battery of intermittent verticals. Partial surveys of a somewhat similar kind are not unusual in the practice of constructional engineers specialising in carbonising plant. But these have been generally carried out at a particular point in the life of a retort bench and then when it is in an advanced state of decay. This investigation is in line with recent enterprises of this Committee in the direction of studying a retort or a setting throughout a long period of its working life—enterprises to be wholeheartedly welcomed and encouraged.

The retort bench selected for this study is not of a design which one would expect to show much in the way of differential movement. The retort settings proper are anchored to the mass of producer brickwork extended over the full length and depth of the bench. It may be freely admitted that the declared objects of the investigation were fully attained. The external movements of the retorts and brickwork were ingeniously and successfully measured with indisputably sufficient accuracy. And it was shown that there was a definite, if not necessarily causal, relation between these movements and the development of cracks in the retort walls. We are not sure whether the tilting movements, to which these cracks are ascribed, could be entirely prevented by changes in the construction or in the methods of bracing the bench. No doubt a retort bench built and heated in absolute symmetry could be expected to be free from tilting. It would appear axiomatic, for instance, that the setting proper should be free to expand and contract unhampered by any adjacent structure; perhaps this one was so constructed. But even so, to expect freedom from internal disturbance in a structure heated within to a high temperature and exposed without to the atmosphere is perhaps too much, especially as in the case of intermittent retorts particularly the internal temperature is subject to considerable oscillation between charging and discharging.

Progress was reported on a number of other lines of investigation. The theory that flaking in retorts is connected with the difference in thermal expansion coefficient between carbon and silica at or above 800°C. was pushed a little further. Practical carbonisers will no doubt continue to hold that local high temperatures during the scurfing operation are at least a possible contributor to this form of destruction. The new technique of 'downward' scurfing coupled with careful control of combustion chamber temperatures during the operation may do much to obviate the danger to refractories. And the suggestion that different zones in the high temperature range of the vertical retort should be constructed in different materials would appear to be open to another objection—that differential expansion characteristics may lead to rupture at the junction of the two materials. It may be doubted too whether the trend towards the use of silica as against high silica content siliceous retort materials is a real advance.

Investigations of the properties of silica rocks from several sources at home and abroad are no doubt allied to trials under working conditions which we understand are in progress with refractories from several sources. And again they are related to the investigations on the clay-quartz system which are going on at Leeds. Tests on and experiments with insulated bricks, on the colour of fired clay goods and the 'glass bond' in silica bricks are other topics briefly touched upon in the 42nd Report.

There is indeed evidence that we are getting somewhere in the attack on the problem of developing a stable refractory and a stable retort, an attack in which there is full collaboration between the manufacturer, the operator, and the laboratory worker. If the task of co-ordinating the results of a single investigation is a formidable one that of bringing all the investigations to practical fruition is still more formidable. All one can do is to note that progress is being made.

GASWORKS EFFLUENT

THE two papers presented and discussed at the last session of the research meeting of the Institution of Gas Engineers—one by Messrs. Cooper and Bouch, the other by Dr. Blackburn, Mr. Tomlinson, and Mr. Summers—were devoted to a problem which is being forced upon the gas industry with increased urgency. The visitors, particularly those invited from outside bodies to participate in the discussion of the joint paper submitted by the Gas Research Laboratory at Leeds and the officers of the Water Pollution Board operating at Stivichall (Coventry), signalised the very satisfactory co-operation between our own industry and the authorities responsible for sewage purification. Mr. Lovett, of the Yorkshire Ouse River Board, summarised the present position most effectively. It is governed, and its urgency increased, by three factors—the increasing load on sewage purification plants, the increase in output and in concentration of gas-making plants, and the recent legislation on river pollution. Mr. Cooper made the point that the gas industry's obliga-

tions in this new situation can only be met by further expenditure, whether for pre-treatment of the effluent from the gasworks or to indemnify the sewage purification authority against extensions on their part to deal with it. Mr. Lovett gave a pointer to the possible magnitude of the latter. One gallon per day of spent liquor was equivalent to the sewage of two persons, which represented a capital outlay of £3. The emission of crude liquor would double this.

The two papers are complementary. Both indicate lines of approach rather than finality. Both represent methods rich with the promise of success. Messrs. Cooper and Bouch propose, as Mr. Evans put it, to pre-heat the liquor, after the removal of free ammonia, by simulating bacterial oxidation by indirectly employing atmospheric oxygen—by the use of 'bacterii Cooperii'! Dr. Blackburn and Mr. Tomlinson propose to 'identify the evils' by fractionating the liquor and studying the effect of the several fractions on the sewage purification process. The two methods thus broadly defined hang together. Further amalgamated, the one side may be able to inform the other just what it is most effective to 'destroy' in the effluent. It may be we shall come to a point where we shall not be satisfied to destroy, as we too often do now, substances which are, in their proper place, of value to the national economy. Mr. Wedgwood called our attention sharply to the advisability of reconsidering the destruction of phenols, for instance, which, as he said, the carbonising industries are pouring down the drain while the chemical industry is busy synthesising them for profitable use. The demand for phenol, he pointed out, is rising to the point that exports are prohibited except in emergency cases. He feels very strongly the need to turn our minds from the destruction of these substances and towards the discovery of practical processes of recovery in the interest of the nation's economy. This may seem a very ungracious reception for Mr. Cooper's fine work, but we are sure he is as alive to that ultimate object of his efforts as anyone.

In the meantime students of these papers will turn with very great interest to the discussion of each by the authors of the other—Dr. Blackburn's lengthy discussion of the proposed pre-treatment and Mr. Cooper's brief comment on the study of the effect of the several fractions of the effluent on sewage purification. We need not follow Dr. Blackburn's criticism in detail; they must be studied in full to appreciate them. Mr. Cooper's method is briefly outlined in the summary of his paper. Its economic success turns on the recoverability of the nitric and nitrous acids and the products of their decomposition after their work in the destruction of the toxic constituents of gasworks effluent. The plant used appears to be simple in construction. And the process appears to hold high promise, though only if used on a considerable scale.

No doubt the cost will be increased if Mr. Evans' dictum is accepted that the process should be applied only to dephenolated liquors, desirable though this may be. The President emphasised the point that this work had reached only the pilot plant stage and that Mr. Cooper had presented his paper only under considerable pressure. One feels, however, that it could not be in more capable hands.

Criticisms of the paper by Dr. Blackburn and Messrs. Tomlinson and Summers appeared to crystallise out into a doubt whether the fractions of the effluent separated out at Leeds really represent constituent bodies which, as Dr. King put it, when reconstituted would have quite the same effect as the original liquor. Dr. Jenkins, in his keen analysis, pointed to variations in the properties of liquor and promised a report on his own experiments, not to be completed in less than three years, in the direction of preparing synthetic liquors, adding different constituents, and noting their effect on the bacterial properties of filter beds. And Dr. Southgate suggested that university laboratories might collaborate in fundamental study of the chain of reactions by which constituents of gas liquor are decomposed by bacterial action. Developments in the method of fractionation might then be indicated.

In the meantime there is the question of the hot-gas electro-detarrer. Mr. Tomlinson appears to be not so certain of its efficacy as some of its advocates, or perhaps it is that he does not entirely accept the usual theory of its precise action. In his discussion of this part of the paper Dr. Marsden made the point that the terms 'higher tar acids' and 'polyhydric phenols' are not interchangeable, although the former may contain the latter—and asked what precise method was contemplated for the separate disposal of retort house liquor. The important point to the gasworks designer is that if the electro-detarrer is to be inserted in the gas stream before the condenser another one will be required lower down the stream, where the gas is cool, if we are to retain this useful plant to keep the purifiers clear of tar fog, an advantage few would like to forego. Replies to all this lengthy but interesting discussion will be awaited with equal interest.

Dr. Marsden summed up in the sentence: 'Whether we like it or not the time has come when effluents will be accepted only if they conform to certain definite standards.' The work at Leeds is to go on, we are promised by Dr. Hollings. At any rate this work represents an entirely fresh approach and he ended (as we may) on the refreshing note, 'work in this field of biochemistry in the next few years may be quite exciting.'

CHEMICAL WORKS MAINTENANCE

In the rapidly expanding field of chemical industry where new discoveries of fundamental importance are a commonplace occurrence and where manufacturing processes and techniques are constantly changing, a well balanced engineering organisation is essential. Such an organisation would embrace a very substantial field of general engineering. That it is no specialist organisation peculiar to the chemical field was emphasised by Mr. H. Birchall in his paper 'Chemical Works Maintenance' presented to the Chemical Engineering Group of the Society of Chemical Industry on December 11. Such an organisation, he said, must be able to direct on systematic lines all site main-

tenance and construction operations, yet possess sufficient flexibility to deal effectively with the many technical problems inherent in the complexity of the plant and processes employed. The whole conception of the chemical works engineer, whose sole function was that of plant mending, should have long since passed. Scaled up facsimiles of laboratory apparatus, which in the early days of the chemical industry made up most of the industrial units, had been largely superseded by modern mechanised production units of high output, highly instrumented for automatic control and equipped comprehensively with mechanical handling devices. The emphasis of functional design, said Mr. Birchall, had created specialists' fields in the design of plant for unit operations, and up-to-date equipment embodied the latest advances in engineering design and materials of construction. All this, he suggested, demanded a scientifically planned maintenance system; and in his paper he dealt with such a system in some detail. Having resolved the various aspects of the maintenance problem into three main groups—technical, organisation and methods, and economics—the author described the setting-up of a maintenance organisation with its complexities of manpower allocation, workshops planning, equipment, etc. Interesting as this is, its ramifications are too far removed from our sphere of activities to permit a detailed examination. We would, however, draw attention to one of Mr. Birchall's observations—one which is very much on home ground. This is the vital relationship of chemist and engineer, a subject to which frequent reference has been made in our columns. Remarking that an efficient organisation cannot be achieved without the utmost co-operation and goodwill of these two, the author comments that it is not sufficient to endeavour to inculcate in each the mutual understanding of the problems of the other. In addition, the level of their scientific training should correspond if the full weight of their joint scientific experience is to be applied.

Personal

GAS COUNCIL CHAIRMAN

Sir Edgar Sylvester, K.B.E., F.C.A., is retiring from the Chairmanship of the Gas Council on December 31. When he accepted the Chairmanship in 1948, Sir Edgar Sylvester made it clear that he did not wish to enter into a long commitment and desired to be free to resign the Chairmanship after the initial formative period. Some months ago he indicated his wish to retire at the end of this year.

Colonel H. C. Smith, C.B.E., D.L., J.P., M.I.C.E., M.INST.GAS E., Deputy Chairman of the Council, has been appointed chairman by the Ministry of Fuel and Power. Colonel Smith is Chairman of the Gas Research Board and a member of the Scientific Advisory Council appointed by the Minister.

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Mr. Hugh Beck, B.SC., London Office Manager of Crossley Brothers, Ltd., Diesel Engine Manufacturers, Openshaw, Manchester, has been appointed to a seat on the Board.

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Mr. Lawrence Weaver has severed his connection with Brotherton & Co., Ltd., and ceased to be Commercial Manager and a Director. **Mr. J. T. Barrie** and **Mr. W. F. Dunnett** have joined the Board of the Company.

◇ ◇ ◇

The many friends in the industry of **Mr. D. A. Pratt,** of Firth, Blakeley Sons & Co., Ltd., will be sorry to learn that following a severe heart attack he is confined to his home at York, and is unlikely to be at business again for some time.

Mr. J. A. Franklin, Sales Manager, Ascot Gas Water Heaters Ltd., has returned to England after an extensive sales promotional tour of the United States and Canada, and will shortly be resuming his activities in the home market.

◇ ◇ ◇

Mr. Harry H. Webster, of Larbert, Stirlingshire, has taken up the position of Sales Manager to R. Y. Pickering & Co., Ltd., of Wishaw and their subsidiary companies. The group has, in addition to the normal Pickering activities of wagon and carriage building, embarked on the manufacture of plant embodying the new techniques of high vacuum and electronics.

◇ ◇ ◇

Mr. Frederick Allison, an Assistant Mains Superintendent with the North Thames Gas Board, has retired after more than 45 years' service in the distribution department. For the past 21 years he has been Assistant Mains Superintendent in the Central London area of the Board and for more than 40 years he never had a day's sick leave. He was presented with a sum of money and a portable wireless set, subscribed for by his many friends and colleagues at a farewell ceremony at Goswell Road office.

◇ ◇ ◇

Mr. J. R. W. Alexander has been elected to the Presidency of the Chartered Institute of Secretaries for 1952. He adds another name to a long list of those in the gas industry who have taken a prominent part in the Institute's affairs since its foundation in 1891. The first of these men was James A. Kelman, Secretary of the Gas, Water, and General Investment Trust, co-founder with Thomas Brown of the Institute. Another prominent figure in the gas industry who became President of the Institute at the turn of the century was Arthur H. Cane, Secretary of the Reading Gas Company. One who had a long association with the Institute was George Clarry, a Fellow from 1898 to 1931. Clarry was General Manager and Secretary of the Cardiff Gas Light and Coke Company, and was the first Chairman of the Institute's South Wales and Monmouthshire Branch, which was founded in 1912. He was also a member of the Institute Council. Another prominent member of the Institute—he was a Fellow for 41 years—was H. R. Sibson, Assistant Secretary of the Bombay Gas Company. At his death, just over five years ago, he bequeathed nearly £1,000 to the Fund. C. W. Braine, Secretary of the Wandsworth and Putney Gas Light and Coke Company, was a Fellow for 40 years (1897-1936) and a member of the Institute Council. Frank Bush, another Fellow, was Secretary of the South Metropolitan Gas Company. A benefactor of the Institute's Benevolent Fund and the donor of prizes for competition in the Institute's examinations was J. W. Slack, Managing Director of Radiation Ltd. He was President in 1924-1925. Mr. Alexander succeeds Sir Edward Wilshaw, the Diamond Jubilee President, who was formerly Chairman of the Romford Gas Company.

Diary

Jan. 1.—East Midlands G.C.C.: Victoria Station Hotel, Nottingham, 11 a.m.

Jan. 4.—London and Southern Juniors: 'Technical and Sales Requirements for Appliances,' G. H. Fuidge, Chief Physicist, South Eastern Gas Board; 178-180, Edgware Road, W.2, 6.30 p.m.

Jan. 12.—Western Juniors: Presentation of papers by Student Members, Taunton.

Jan. 14.—West Midlands G.C.C.: Dudley Room, Queen's Hotel, Birmingham, 2.30 p.m.

Jan. 15.—London and Southern Section, I.G.E.: 'Industrial Applications of the Gas Turbine,' A. W. Pope (W. H. Allen, Sons, & Co., Ltd., Bedford). 17, Grosvenor Crescent, 2.30 p.m.

Jan. 15.—Chemical Engineering Group: 'The Patent Act of 1949,' Norman Brown. Burlington House.

Jan. 16.—Eastern Juniors and London and Southern Juniors: Joint Meeting. Visit to Chelmsford.

Jan. 16.—Yorkshire Juniors: 'Electricity in Gasworks,' W. Blakeley (Chief Engineer's Department, North Eastern Gas Board), preceded by visit to Kirkstall power station.

Solid Fuel Analysis

From the Hon. Secretary of the Coal Industry Society we have received particulars of a practical laboratory course in solid fuel analysis in the Department of Metallurgy of the Sir John Cass College. The course, which will be conducted by Mr. S. Wald, B.SC., will be held on Monday evenings throughout the second term of the 1951-52 session, beginning on January 7, from 6 to 9 p.m.

The syllabus covers the proximate analysis of solid fuels, determination of moisture, volatile matter, ash, sulphur, and calorific value; the evaluation of the caking power of coal, the B.S. swelling number, agglutinating value; and the Gray-King assay for coke type.

Chemical Engineering Wiltons, Ltd., is now the name of the company formerly known as the Chemical Engineering and Wilton's Patent Furnace Co., Ltd. In other respects the constitution of the company, which is associated with Simon-Carves, Ltd., remains the same.

Salary Increase for Gas Staffs.—At a recent meeting of the National Joint Council for Gas Staffs, consideration was given to a claim from the staff side for an increase of all salaries and salary scales. Agreement was reached that graduated increases on existing national salary scales for males ranging from £5 per annum to £25 per annum will operate in respect of work performed as from January 1, 1952. It was also agreed that 80% of the above increases should apply to the existing scales for females as from the same date.

FIRST WIGGINS HOLDER IN BRITAIN

IN the small market town of Alston, high in the Cumberland fells, a new type of dry seal gasholder has been constructed for the Northern Gas Board by Ashmore, Benson, Pease & Co., of Stockton-on-Tees. This is the first Wiggins dry seal holder to be erected in Great Britain.

The Wiggins holder (described in our issue of September 5, 1951) is essentially a piston displacement type as opposed to the bell or lift type. The seal medium used to prevent the escape of gas through the annular space between piston and shell is a flexible impermeable synthetic rubber coated fabric, usually asbestos cloth impregnated and coated with neoprene. The asbestos cloth used is designed to give the strength required with a weave that will permit the coating to key through the cloth to give maximum peel strength. Neoprene coating is selected because of its excellent resistance to ageing, permeability, and chemical reaction.

The new holder at Alston, which has a diameter of 29 ft., adds 10,000 cu.ft. to the storage facilities in the area.

The Alston site is very exposed and the winters are severe. The fabric seal of the holder, however, has an operating temperature range of minus 40°F. to plus 180°F. The piston and seals are completely protected from snow, ice, and rain, and the external parts of the balancing system are designed to withstand all hazards of winter weather. The necessity for cold weather protection against freezing seals is eliminated and with it the cost of heating or treating the sealing medium.

At Alston, erection was begun on September 1 and the holder was ready for testing in eight weeks. Simplicity in design was a contributing factor to the speed of completion and the elimination of the heavy foundations required by the

traditional types of holders also assisted in reducing the constructional period. The foundations, which were laid by local people, took about a fortnight to lay.

Mr. H. D. Lees is the General Manager of the Hexham Division of the Northern Gas Board and is responsible for the Alston works.

FUEL PROBLEM BROADCAST

'Thirty-five million tons of coal are burnt annually in household fires; if only 18 mill. tons of this were carbonised sufficient gas and coke would be produced to do the same work, thus saving 17 mill. tons by this means alone.' This contention was the keynote of a progress report on gas broadcast recently as a discussion by Mr. D. P. Welman, Chairman of the North Western Gas Board, Mr. W. Hodkinson, the Board's Chief Technical and Planning Officer, and Mr. J. B. Vickers, Vice-Chairman of Yorkshire Tar Distillers, Ltd. The discussion, one of a series dealing with developments in Northern industry and scientific research, marshalled facts and figures supporting the case for more rapid expansion of the gas industry as an instrument of national fuel economy. Our photograph shows Mr. D. P. Welman (centre) in the B.B.C.'s Manchester studios, with (left to right) Mr. W. Hodkinson, Mrs. Newbury (B.B.C.), Mr. Ray Lakeland (Producer), and Mr. J. B. Vickers.

British Tar Confederation

At the annual general meeting of the British Tar Confederation on November 29, the following were elected for the year 1951-52:

President: Sir Walter Benton Jones, Bart. *Hon. Treasurer:* C. E. Carey. *Chairman of Executive Board:* Major A. G. Saunders. *Vice-Chairmen of Executive Board:* W. K. Hutchison and Leslie O'Connor, C.B.E.

The Executive Board consists of 10 representatives nominated by each of the Association of Tar Distillers, the British Association of Coke Oven Tar Producers, and the Gas Council, and they are as follows:

Association of Tar Distillers: L. W. Blundell, C. E. Carey, E. Hardman, Capt. C. W. Harriss, C. Lord, Wm. McFarlane, S. Robinson, Major A. G. Saunders, L. Shuttleworth and W. A. Walmsley.

British Association of Coke Oven Tar Producers: A. Bradbury, G. W. J. Bradley, W. Robson Brown, M.P., K. McK. Cameron, F. W. O. Doddrell, C. F. Dutton, C. M. Frith, Lt.-Col. P. F. Benton Jones, Leslie O'Connor, C.B.E., C. F. Sullivan.

Gas Council: S. Black, F. Boardman, D. D. Burns, W. Hodkinson, W. K. Hutchison, A. W. Lee, A. McDonald, M. Milne-Watson, Colonel H. C. Smith, C.B.E., D.L., J.P., S. E. Whitehead, O.B.E., J.P.

Hampton Court Gas Centenary Dinner

UNDISMAYED by nationalisation, members of the Athletic Club of the former Hampton Court Gas Company celebrated the 100th anniversary of the foundation of the Company by a dinner at the Griffin Hotel, Kingston-on-Thames, on November 29. They took advantage of the occasion to make the surprise presentation of a silver cigarette casket to Mr. C. T. Price, who, before receiving a higher appointment, had been Engineer and General Manager of the Company. Every employee contributed to the gift which was suitably inscribed to express the donors' esteem. Mr. A. Austin, a pensioner with 50 years' service, was deputed to make the actual presentation.

Despite the inveiglements of two large adjoining gas companies which each attempted to absorb it, the Hampton Court Gas Company, up to vesting date, had clung to its independence. It was a family concern—the original works were built in 1851 by Edward Price—and as members of the family all employees had also been regarded. To the wise guidance of the Kents who held a long succession of chairmanships, and to the Prices, the Company owed most of its prosperity. Some of the inventions and developments which came from Hampton Court added, incidentally, to the advance of the gas industry as a whole.

Mr. W. K. Hutchison, Chairman of the South Eastern Gas Board, who presided at the dinner, outlined the history of the old Company and was unstinting in his tributes to it, but lightly qualified his observations by indicating a doubt whether the Board had taken over Hampton Court, or whether Hampton Court had taken over the Board—a reference to appointments.

When Mr. Price spoke, he related many human, and humorous, reminiscences, mostly about those engaged at Hampton Court, past and present. One item he found particularly interesting was a Board minute, dated January 21, 1856, which authorized the purchase of the *Journal of Gas Lighting* for 12 months. As this journal celebrated its centenary in 1949, it was then precisely seven years old. The foundations of the cricket section, he recalled, were laid by Charlie Crooks soon after the Boer war. (Charlie Crooks and many other pensioners were present at the dinner.) Mr. Price also described some of the problems of operation which had arisen, on various occasions, on the works. Approaching more recent times, he spoke of the work of Hampton Court personnel during the second world war, in the Home Guard and in the Civil Defence service; of how volunteers went to Stepney to assist the Commercial Gas Company in the height of the air raids and suffered casualties in doing so. He still had a feeling of resentment, he said, that representations made for recognition had been negatived and passed unheeded by the official mind.

Lieut.-Colonel P. A. Symmons, a former director and commander of the 3rd Battalion, Middlesex Home Guard, also spoke, humorously and reflectively.

Colonel C. M. Croft, former Managing Director of one of the two 'neighbouring covetous companies,' added to the tributes paid to Hampton Court. He was present as a guest by reason of an appreciation that only by his kindly and voluntary co-operation were coal supplies to Hampton Court works in later years maintained.

Mr. H. J. Hodder, now Engineer at Kingston, proposed a toast to the Chairman of the Board, thanking him for his sympathetic support and encouragement in the matter of holding the dinner. In the course of the evening, thanks were also expressed to Mr. Harry Lewis, of Board headquarters, who voluntarily produced sketches to decorate the menu card, one of which depicted a stout oak tree bearing, as foliage, the names of past and present Hampton Court employees, a novel item well received.

Mr. J. de R. Kent, former Director, and Mr. C. W. Kent, former Chairman of the old Company, were unable to attend the dinner, but sent their good wishes. Other guests present were Mr. R. H. Sandford-Smith, Secretary to the Board, Mr. R. J. McCrae, Personnel Manager, and Mr. R. M. Farror and Mr. F. A. Cheeseman, principal officers of the West Surrey Division, under the local jurisdiction of which the Hampton Court gasworks now operate.

FIRST WILLIAM DIETERICHS PRIZE AWARDED

Albert Wing (left) receiving the prize from Mr. R. N. Bruce.

SEVENTEEN-YEAR-OLD gas fitter, Albert Wing, has been awarded the first 'William Dieterichs' prize given by the North Thames Gas Board to the 'best apprentice in the workshops,' after completing his initial training at the Board's Stratford training centre.

The prize was instituted this year in memory of the late Mr. W. Dieterichs, a former apprentice who became Manager of the Board's research and training centre at Watson House before his tragic death last year, and consists of the 'William Dieterichs Shield' awarded to the best apprentice of each training term and an individual prize for the winner.

Albert Wing selected for his prize a set of drawing instruments and textbooks, and these were presented to him recently at Stratford by Mr. R. N. Bruce, the Board's Staff Controller. Among those present were Dr. Jinkings, Principal of East Ham Technical College; Mr. R. N. Le Fevre, the Board's Training and Education Officer; Mr. C. H. Coley, Eastern Divisional Manager; and Mr. W. J. R. Waterfield, Station Engineer at Stratford.

At present, Albert Wing is gaining district experience in gas-fitting in the Barking Road district.

Manchester and District Section

Institution President's Visit

THERE was a large attendance at the second ordinary general meeting of the Manchester and District Section of the Institution of Gas Engineers at the Grand Hotel, Manchester, on December 14. The chief item on the agenda was a paper on 'Economics of Gas Production,' by Mr. T. Nicklin, Production Engineer, and Mr. M. Redman, Assistant Production Engineer, North Western Gas Board. An abstract of the paper, with a report of the discussion, will be published in a later issue of the *Journal*.

The **Chairman,** Mr. T. Haworth, made sympathetic reference to the death of Mr. R. N. Webb, who was President of the former Manchester Association in 1937. After his retirement, said the Chairman, Mr. Webb did not take off the harness of the gas industry, but continued to serve the industry by lecturing for the B.C.G.A. and in other capacities.

The meeting accepted the resignations of Messrs. E. Astbury, A. Cook (Warrington), T. R. Cook (Blackpool) (a past President), S. Tomlinson Jones, M. Newsom, R. Ruggles, S. H. Stokes, and F. L. Wimhurst.

The following new members were welcomed: T. W. Aiken (Wilmslow), S. H. Brown (Colne), E. Butterworth (Begwaco Meters, Ltd.), P. Gallagher (Leigh), R. Hayes (Barrow-in-Furness), A. K. Howell (Hazel Grove), W. F. S. Howell (Manchester Group), J. R. Hunt (Appleton), F. H. King (Gt. Horton, Bradford), R. Pollard (Davyhulme, Urmston), P. H. J. Price (Lancaster), J. J. Priestley (Huddersfield), P. Robertshaw (Ovenden, Halifax), N. W. Shepherd (Whitefield), L. B. Smethurst (Bridlington), E. Taylor (Huddersfield), L. J. L. Walker (R. and J. Dempster, Ltd.), and H. Whiteley (W. C. Holmes and Co., Ltd., Huddersfield).

President's Medal

The **Chairman** announced that Mr. G. S. Frith, President of the Association in 1924 and previously Secretary from 1914 to 1922, had given back to the Section the President's medal which was presented to him at the end of his year of office. Mr. Frith, he said, was now well over 80, was a J.P., and was enjoying his retirement at Colwyn Bay. In view of the scarcity of gold and the difficulty in obtaining such jewels it was Mr. Frith's wish that it should be used again and presented in the future to a Chairman of the Section at the conclusion of his year of office.

Mr. F. H. Robinson, a past President, formerly of Bishops Stortford and earlier of Harrogate, presented Higher Grade Certificates to the successful students from the North Western area in the 1951 examinations of the Institution of Gas Engineers.

Mr. J. H. Dyde, President of the Institution of Gas Engineers, after being warmly welcomed by the Chairman, said he was delighted to see so many students coming forward, and he hoped the standard would increase. Education never finished, neither did experience, and his advice to the students was 'See that you extend your education to the limits, and also your experience.' It was a great source of encouragement to see the growing strength of the Manchester and District Section and its work in extending the objects of the Institution. It was also a great encouragement to see the recognition and support that was being given to the District Sections by the area boards. They knew and realised that it was very essential that there should be a free platform on which the men who were interested in the engineering and scientific aspects of the industry whether holding high positions or being but juniors might enjoy a democratic right to deal with matters of technology and service. Manchester and District was one of the largest Sections, and the Institution in general looked to it for leadership.

Mr. T. Nicklin then presented the paper, and **Mr. Redman** dealt with most of the questions raised. At the close of the discussion **Mr. A. McDonald,** Senior Vice-Chairman, proposed, and **Mr. A. K. Collinge,** Junior Vice-Chairman, seconded, a vote of thanks to the authors.

The **Chairman** reported the illness of Colonel W. M. Carr and expressed good wishes, on behalf of the Section, for his speedy recovery.

The ballot for officers for the 1952-53 session resulted as follows: Chairman, A. McDonald (Member, North Eastern Gas Board); Senior Vice-Chairman, A. K. Collinge (Preston); Junior Vice-Chairman, H. Johnston (Leeds); Auditors, J. H. Richmond (Mid-Cheshire) and A. F. Yates (Goole); Hon. Secretary, A. H. Nicholson (Blackburn); Hon. Treasurer, J. H. Clegg (Accrington); Ordinary Members of Committee, W. S. Hubbard (Liverpool), C. A. Newham (Bradford), and T. D. Olver (Manchester).

Mr. A. McDonald briefly acknowledged the honour conferred on him in his election as Chairman and promised to do his best to uphold the traditions of the office.

Luncheon

The meeting was preceded by a luncheon at the Grand Hotel, at which speeches were exceptionally few and short, and there were no formal toasts.

The **Chairman** briefly but cordially welcomed the principal guests, among whom he mentioned Mr. J. H. Dyde (President of the Institution), Mr. D. P. Welman (Chairman of the North Western Gas Board), Mr. A. Henshall (Deputy Chairman), Mr. H. Butters and E. A. Carpenter (Members of the Board), Councillor C. E. P. Stott (Chairman of the North Western Consultative Council), Mr. F. H. Robinson (Past President), Mr. F. G. Shaw (Buxton), and Mr. C. Johnson (Coal Officer of the Gas Council). He also mentioned the presence of Mr. A. McDonald, in one sense a visitor as being a member of the North Eastern Gas Board, but an old friend and their own Senior Vice-Chairman. Last but not least he welcomed the large number of students who were to receive their certificates later in the day.

Mr. J. H. Dyde informally thanked the Chairman and members of the Section for their warm welcome. Their Section of the Institution was unique in that it brought together gas engineers from both sides of the Pennines. It had established a tradition with a series of very hard working Presidents and Secretaries, and he paid tribute to their present Chairman, whom he had seen at work on the Council of the Institution. If he was not a frequent speaker he was none the less distinguished as one whose words were words of wisdom.

North of England Section I.G.E.

A JOINT meeting of the North of England Section of the Institution of Gas Engineers and the Northern Junior Gas Association was held at West Hartlepool on November 23, 1951.

Mr. W. O. KIRKWOOD (Chairman of the Section) referred to the fact that this was the first time a joint meeting had been held between the senior and junior members of the profession in the North of England; he hoped it would be a forerunner of many more.

A short statement on the formation of industrial civil defence units in the Northern area was made by Mr. J. Richardson (Officer in Charge of Civil Defence Training, Northern Gas Board).

Mr. F. BELL (Group Engineer, Distribution, Liverpool group, North Western Gas Board) presented a Report of the Sub-Committee on Unaccounted-for Gas of the Institution of Gas Engineers, and there followed a discussion. A report of the discussion will be published subsequently in the *Journal*.

A vote of thanks to Mr. Bell was proposed by Mr. J. E. WHITE (Newcastle) and a vote of thanks to the Northern Gas Board and to Mr. F. L. Scaife (General Manager, Stockton division) for the facilities and hospitality provided was proposed by Mr. R. S. LONGHURST (Carlisle).

William Sugg & Co., Ltd., some years ago inaugurated a profit-sharing bonus scheme for their employees. This year the bonus amounts to 10.1% of the wages earned by each employee during the financial year, based on a normal working week, and is equivalent to approximately five weeks wages. It was paid to the employees during the week commencing Monday, December 3.

RESULTS OF SECOND YEAR'

Demand for Gas Greater than Supply

In our issue last week we summarised the second report of the Gas Council covering the 12 months to March 31, 1951. Today we epitomise in the following the reports and statements of accounts for 1950-51 of the area boards. Sales of gas during the period showed an increase of 5%, several schemes of integration were brought to fruition and progress was effected in many others. The overall picture, however, is the outstripping of supply by demand.

SOUTH WESTERN

ALTHOUGH, having taken over a revenue deficiency of approximately £617,000, there was still a deficiency of £570,033 at the end of the first year, the Board was not discouraged with the results of the first year's working. That this was not misplaced optimism is proved by the fact that the deficiency has now been reduced by £284,864, after paying interest on British Gas Stock and making provision for obsolescence and depreciation amounting to £1,201,410.

While it is true that this improved financial position is partly due to increases in the price of gas, much of it is also directly attributable to the many economies and improvements in works practices which have been achieved and are now showing an increasingly good effect. An example of this is shown in the results of the fuel efficiency surveys which have been made in most of the works throughout the area and which are directed towards the economical and efficient operation of plant. The savings produced by these means alone amount to approximately £122,000, despite substantial increases in the cost of coal, oil, wages and depreciation which have all had to be met by the Board. To quote just one example, the Board's coal bill has increased from £4,905,000 to £5,335,000 a year. Greater efficiency and economy, however, are still a long way from reaching their limits.

Of the 105 gas producing units taken over, five works have already been closed down and these will be followed by a number of others as quickly as circumstances permit in order to reduce costs and to give an improved service. Major production projects involving a total capital expenditure of over £5¾ mill. have been approved by the Board since vesting date, of which nearly £2 mill. has already been spent.

Mileage of gas mains is now approximately 4,516 miles, of which 124 miles were installed or replaced last year; 11,776 services, mainly for new housing estates, were installed and 7,246 existing services were renewed.

The number of consumers of all types at March 13 was 623,787, an increase of 8,131 on the year. Sales of the following appliances also show substantial increases: Cookers (25.5% increase), fires and radiators (21.7% increase), water heaters (30.4% increase) and sundry appliances (30.7% increase).

Sales of by-products show increases as follows: Coke (5.7%), breeze (10.4%), tar and tar products (1.4%) and carbon black (11.8%).

The improved results have been achieved in spite of a decrease of 71 in the number employed. Every effort has been made to avoid undue hardship in achieving this economy and vacancies caused by normal wastage are only filled if it is essential for replacements to be made.

Consultative committees are being formed in each of the 11 sub-divisions for consultation between managements and the staff and workmen which are expected to be in full operation early in 1952.

Provided there is no serious deterioration in the nation's affairs—either economic or otherwise—the present rate of the Board's progress in all its activities will undoubtedly produce even more striking results for the better in future years. Besides providing a continually improving service to consumers throughout the area, these good results can only be applied to the benefit of consumers generally and, subject to the above qualifications which must be obvious to everyone, the Board is fully conscious of one of its main statutory duties—namely, to reduce, so far as practicable, the price of gas and coke. Although this statement might sound rather paradoxical at a time when increased costs have forced up the price of gas along with the price of practically every other commodity which can be bought today, it is, nevertheless, true that increases in the price of gas would have had to be greater if it had not been for the many economies already achieved.

SOUTHERN

THE surplus of £148,663 on the year's trading has been sufficient to write off the deficit of the preceding 11 months; to transfer an amount of £50,000 to a plant replacement and obsolescence reserve; and to provide a small balance of £1,097 to be carried forward. This is a source of gratification to the Board, tempered, however, by regret that increases in costs outside the Board's control made it necessary to increase the price of gas during the year, in spite of substantial savings in freight and transportation charges made possible by the use of larger ships and more efficient methods of unloading and carrying coal from the ports of discharge.

Despite the disappointments occasioned by continually rising costs and those connected with delay to plans for integration and improvement of gas supplies owing to the shortage of the necessary materials, real progress was made throughout the area. The year has been one of difficulty and stress, but there have been solid achievements and the Board are conscious that the enthusiasm, energy, and co-operation so willingly given at all times by all employees, have contributed in no small measure to the success obtained.

Some 140 miles of mains were laid, including a considerable portion of the Reading to Oxford main. Progress on integration plans made possible the closing of works at Swanage, Haslemere, Charlbury, and Shipton-under-Wychwood. The link between manufacturing stations at Aldershot, Camberley, and Farnham was completed during the year.

New gasholders have been put into commission at Lymington and Christchurch, reducing the cost of pumping gas from Bournemouth in peak load periods. Foundations have been laid for new holders at Alton, Bordon, Camberley, Fleet, and Tring.

The irregularity of coal deliveries presented a number of problems and at some works was the cause of higher handling charges. The switching of supplies between different supplying coal fields had the effect of raising the cost of certain seaborne coal, freight charges being higher in respect of the smaller ships which had to be used at the particular port of loading. The quality of the coal supplied fluctuated considerably and there was a marked deterioration in supplies from certain coal fields. The use of two new colliers of a capacity of 2,500 tons each, which were put into service in May and December, 1950, respectively, provided substantial savings in freight charges, while the putting into commission of a fleet of specially designed 15-ton diesel lorries and the use of the new coal unloading plant at Portsmouth gave substantial economies in handling and transport costs.

The amount of coal carbonised during the year was 1,330,904 tons, the average yield of coal gas per ton being 71.3 therms. The comparative figures for the previous year were 1,264,240 tons and 71.5 therms respectively.

WORKING OF AREA BOARDS

Development of Integration Schemes

Sales of gas were: Domestic consumers, ordinary 30,877,000 therms, prepayment 46,573,000 therms, industrial consumers 8,634,000 therms, public lighting 1,459,000 therms, commercial and other consumers 26,149,000 therms—total 113,692,000 therms.

Consumers totalled 544,845, the increase during the year being 8,929. The average number of therms sold per consumer for the year was 199 and the average price of gas sold to all classes of consumer was 15.6d. per therm.

There were two revisions of gas prices, the first in June, 1950, and the second in March, 1951.

Owing to the shortage of steel, the delivery of certain types of appliances by manufacturers fell short of requirements with the result that demand from consumers could not be satisfied. The heaviest demand was for cookers and it was difficult on occasions to fulfil orders for housing estates, particularly for the cheaper type of appliance. A total of 67,773 appliances of all kinds were sold, the average number sold per thousand consumers being 124. The number of appliances on hire at March 31, 1951, showed a decline, being 169,322 compared with 186,268 at the same date in 1950.

Coke and breeze sold totalled 564,000 tons, coke sales showing an increase of approximately 14,000 tons, or 2½% over the sales during the previous year. Despite increased sales, the year was a difficult one owing to a heavy increase in demand which could not be met, due partly to the inability to produce more coke within the area because of insufficient coal supplies, and partly to the curtailment of assistance from other areas.

Compared with March 31, 1950, there was a decrease of 82 operative and 151 administrative, etc., employees. The total number of employees at March 31, 1951, was 7,638.

Relations between the Board and trades unions were marked by friendliness and co-operation, with a result that much good work was accomplished.

WEST MIDLANDS

IN its report the West Midlands Gas Board states that, having regard to the difficulties arising out of national and international conditions and their inevitable repercussions on the availability of material and labour for maintenance and development, the Board's second year was, in general, satisfactory.

After providing £150,000 for taxation, there was a net surplus of £151,480 for the year, compared with £167,632 for the first period. A sum of £50,000 has been put to the area reserve fund and £50,000 to a special replacement and obsolescence reserve. Including the balance from the previous year, £169,112 is carried forward.

Of the 12 boards, the West Midlands Board is in the unique and fortunate position of having inherited a substantial surplus of assets over liabilities. This surplus, which has been credited to a capital reserve, rose from £1,842,245 to £2,508,715, mainly being an adjustment of the opening figure of income from unread gas for undertakings which did not previously reserve for this income.

Total Income

Total income amounted to £23,500,000, of which £14,700,000 was from gas sales, £5,900,000 from by-products, £1,700,000 from sales of appliances, and £1,200,000 from other sources.

Out of this total income, the Board had to pay £9,700,000 for coal, £6,400,000 for other materials, £5,000,000 in pay and pensions, £1,700,000 in capital charges (depreciation and interest) and £500,000 in rates and taxation. In other words, over two-thirds of the Board's income was expended in the purchase of coal and other materials, and over one-fifth in pay and pensions, leaving a bare one-tenth to cover capital charges and national and local taxation.

The expenditure per therm of gas sold rose by 0.87d. to 11.71d., as compared with 1949-50, the additional costs being due mainly to increases in coal and gas oil prices, wages, and carriage charges. On the other hand, the average income per therm sold increased by 0.83d. to 11.83d. The average price charged by the Board was again the third lowest in the country, being more than 1d. per therm below the national average.

Capital expenditure during the year amounted to £3,200,000, making a total of nearly £5,500,000 for the 23 months since vesting date. This total is equivalent to 45% of the net book values of the fixed assets (£12,200,000) taken over by the Board.

Plant extensions of a nominal daily gas-making capacity of 19 mill. cu.ft. were completed, compared with 11 mill. in the first year. The daily plant capacity at March 31 was 281 mill. cu.ft.

Extensions in course of construction or authorised will add a further 80 mill. cu.ft. per day capacity. The rate at which this can be achieved will depend on the share of the national capital investment programme the Government of the day is able to allocate to the Board. One factor which may have to be reckoned with is whether the large amounts of additional coal that will be required for the extensions of carbonising and generating plants in the country generally will be available. The proposed extensions of the West Midlands Gas Board would alone add approximately 1 mill. tons of coal a year to the 3,112,000 tons already used. Admittedly, the increased gas production would release for sale nearly half that quantity of coke and also various other by-products of economic importance. As a safeguard, the Board has planned an important experimental plant for the production of gas by other means, but it is at too early a state yet to comment further.

Over 11,000 additional consumers were connected, making a total of 1,020,550. Sales of gas rose to 293,340,000 therms, an increase of 6.9%. The increased quantity sold exceeded the total sales in the Worcestershire and Herefordshire division.

Sales to industry increased by 11% over the previous year and exceeded 133 mill. therms. This was 45.5% of the sales and was the highest percentage in the country. Because of the great value of gas as an industrial fuel, this increase was very gratifying but carried its own embarrassment because of limited manufacturing capacity. In fact, the inability of the Board to meet requests for new or additional industrial loads was the most regrettable feature of the year. Requests for such loads from 144 firms, totalling over 8,000 mill. cu.ft. per annum, were refused, to say nothing of many others each requiring less than 4 mill. cu.ft. The considered policy of the Board is to honour to the utmost its present obligations and not to jeopardise the present reliable service by taking on loads which would inevitably result in a serious reduction of gas pressure, if not serious district failures.

Sales of Apparatus

Although anything in the nature of sales campaigns were avoided, approximately 59,000 appliances were sold outright and 54,000 on hire-purchase terms. Limitation of supplies influenced these figures and restricted the opportunity of the Board to adopt an energetic policy of replacing appliances which are out of date.

The quantity of coke sold exceeded 1,087,000 tons, an increase of 46,000 tons. Despite the increase in sales it was not possible to meet all demands and the smallness of stocks was often a cause of great concern.

The difficulty was accentuated by the need to manufacture an increased quantity of carburetted water gas which took 157,570 tons, which was 24,570 tons more than in the previous year. Manufacture of this gas also required more than 19 mill. gal. of gas oil.

The numbers employed, expressed in terms of the number of consumers and the sales of gas, are as follows:—

	Number	Per 1,000 Consumers	Per Mill. Therms
Operatives ...	9,698	9.5	33.22
Staff ...	2,854	2.8	9.78
Total ...	12,552	12.3	43.00

The ratios are below the national average. The Board is responsible for 12.2% of the national sales of gas and employs 8.8% of the total labour force of the area boards.

In common with many branches of industry, the shortage of labour and high rate of turnover in many districts created many problems. In some areas, such as Birmingham, Coventry, and parts of the Black Country, it was the occasion of the greatest concern, inasmuch as the competent manning of vital plant could not be assured at all times. In these circumstances the increased output added to the demands made on the staff and operatives. However, difficulties were surmounted and a reliable service was maintained.

Special attention was paid to problems of welfare, health, and safety, and the industrial medical service, introduced in the first year, was extended with beneficial results.

SCOTTISH

THE Scottish Gas Board recorded a deficit of £283,876 in its first year; in its second it achieved a net surplus of £154,525. For gas sales alone the revenue was £10,711,104 (in respect of 204,923,000 therms) against £8,961,143 in the previous year. The year generally was one of progress. Difficulties, described as serious, included the increasing cost of coal and other materials and the necessary movements of wages, while rising demands called in various places for improvement, replacement, and expansion of plant. 'Much has been achieved but even with ample facilities for work it would take several years to ensure that the industry is properly equipped, and present circumstances create obstacles to rapid progress, which neither the Board nor private industry working with it can overcome.'

Headquarters Accommodation

Efforts were made to acquire more suitable accommodation for the Board's headquarters. Although these had reached the stage of agreement with the proprietor for the purchase of a suitable hotel, the Board was unable to obtain the necessary consent to transfer from the official authorities, and the building passed to another purchaser. With the acquisition of a portion of the premises adjoining those then occupied and the carrying out of internal alterations the position has improved, but it cannot be considered satisfactory as consent to the use of the premises for business purposes has been granted for a restricted period.

The total make of gas was 47,035 mill. therms, in addition to which the Board purchased 3,484 mill. therms of coke oven gas. The total of 50,519 mill. therms represented an increase of 4.2%. This resulted partly from the normal growth of gas sales but owed much to the prolonged winter period during which many manufacturing plants were operating to their maximum. To conserve and maintain coal stocks, water gas plants were operated to the maximum, particularly in the summer months, resulting in a 35% increase in the total water gas produced.

During the year the Board approved 22 further schemes of major improvements to existing distribution systems for the elimination of areas of low pressure of which many were long standing sources of complaint and for meeting the potential requirements for immediate housing and other development without overloading existing mains. Considerable progress was made with integration schemes and efforts were made to link up works so that more economical use could be made of existing plants.

Disregarding appliances not purchased from and fitted by the Board, 120,517 appliances were fitted in domestic consumers' premises resulting, when allowance is made for replacement, in the number of appliances in use being increased by 73,373.

It was estimated that the capital expended on works authorised by the Board or its predecessors would amount in 1950-51 to £3.6 mill., but owing to delays in deliveries and other difficulties a sum of only £2,212,019 was spent. The necessary funds were provided by borrowings through the Gas Council.

The Board reports difficulties in recruiting labour and staff. Recruitment of manual workers was most acute in the highly industrialised parts of central Scotland and in those other districts where unemployment is at its lowest. In certain districts local industries seem prepared to pay higher rates and in some cases much higher rates than those offered by the gas industry, but the Board is against entering into competition with these industries, believing that to do so would throw greater financial burdens on the gas consumer without solving the difficulties of recruitment in that such competition would but tend to local wage spirals.

Increased Strain

The report concludes: 'To meet the growing demands of the public in the present circumstances imposes an increased strain on all those who are contributing to the work, and the Board would acknowledge the valuable efforts made by the staff at headquarters and by those engaged in administration, in manufacture, and in distribution in the districts. Their constant labour has contributed substantially to the benefit of the public, and with better plant and a growing realisation of the functions which gas can discharge there should be increasing appreciation of these efforts. To a substantial degree the happiness of homes in Scotland is enlarged by their efforts and they earn not only their visible remuneration but the gratitude of those they serve.'

SOUTH EASTERN

REVENUE from gas, coke and by-products, etc., amounted to £33,633,133 and there was a net surplus of £588,987. Added to this is a sum of £102,773, representing additional amounts which have become available mostly in respect of hire purchase sales made in 1949-50, following a change in accounting practice. The Board has transferred £300,000 to the reserve fund and £200,000 to a replacement and obsolescence reserve, leaving £191,760 to be added to the amount carried forward.

Sales of gas to consumers for the year amounted to 261,739,605 therms, the output being 5.67% more than for the preceding 12 months. Although this output was influenced by the cold weather, the rise in consumption represented a substantial increase in the general level of demand. The number of consumers increased by nearly 15,000.

Cooker sales were 13% higher than for the previous year and sales of washing machines and other appliances were well maintained, although the sales of domestic water heaters and gas fires were restricted by the high rate of purchase tax.

Coke delivered to consumers and through distributors into the home trade was 1,403,622 tons, 8% more than for the preceding year; 114,787 tons of coke were exported.

During the year particular attention was given to the needs of consumers who were moving into new houses. The general practice in the area is for housing authorities to have gas installed and allow their tenants to choose what form of heat they wish to use for cooking. This policy of allowing free choice is welcomed by the Board. During the year the London County Council was completing the building of one of the largest housing estates in the area and 86% of the tenants on the whole estate chose to have gas cookers.

The development of Crawley New Town has continued during the year. All houses in the new town will be provided with gas supplies and gas will also be used in the standard factory units erected by the Crawley Development Corporation.

During the year more than 200 special appliances were designed or produced to meet the special requirements of industrial consumers.

Other special installations of gas included the heating and kitchen installations for the Royal Festival Hall and the supplies of gas required for the South Bank site of the Festival of Britain.

During the earlier part of the year there was a substantial increase in the

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To all our friends in the Gas Industry
Warmest Greetings and Sincere Wishes for a Merry Christmas
May Happiness and Prosperity be yours throughout the coming Year
FLAVELS of LEAMINGTON
Established in the year 1777
FLAVELS OF
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cost of coal and other materials, and certain increases in the price of gas and changes in tariffs were put into force as from meter readings taken on and after September 5, 1950. In making these changes the opportunity was taken of bringing prices nearer together where the conditions of supply were similar, and also of introducing in a large part of the Board's area tariffs of the same structure for non-domestic users of gas.

Working to Capacity

During the year 3,547,908 tons of coal were used in the production of coal gas and 167,712 tons of coke and 17,340,731 gal. of oil were needed for the manufacture of water gas. At times during the cold spell which occurred towards the end of 1950, the manufacturing plant was working at or above its normal rate of capacity and parts of the distributing system were taxed to their utmost in order to meet the demand. Several works obtained a greater production from their manufacturing plant than ever before and set up new records of output.

The Board has decided that the existing transmission mains within the four London divisions shall be extended and connected so that gas can be transferred between all the main works in these divisions. This will reduce the amount of stand-by plant required, by enabling other works to assist in meeting the load of a works whose plant is being repaired. Production costs will also be reduced by making the maximum use of manufacturing plant situated at the riverside works, where coal costs less than it does inland. When these transmission mains are finally completed a single system of manufacture and supply will be in force covering 70% of the total gas supplied by the Board.

In Kent and Sussex, where the distances between works are much greater, there is not so much opportunity for full interconnection of mains, and the aim will be to build up works best sited to take advantage of coal delivered by sea or by rail from the Kent coalfields.

Under these plans a small number of selected works which are best sited for economical manufacture and distribution will be built up over a period of years to replace 67 separate works which were being operated at vesting date.

It has been necessary to undertake a substantial amount of mainlaying to meet the increased demands for gas arising from the general expansion in the gas load and the building of new houses. During the year 137 miles of main were laid. The mainlaying required to give a bulk supply of gas from the Waddon works at Croydon to the new satellite town at Crawley began in September, 1949, and has made good progress. Negotiations are continuing for the purchase of a site on which to erect the necessary gasholders at Crawley.

The bringing together under the Board of neighbouring undertakings which were separately managed before has provided several opportunities of linking district mains to improve pressures. A high pressure main will connect the Maidstone high pressure system into the southern part of the Faversham district, giving a much improved supply. Interconnecting mains have also been laid between the Milton and Sittingbourne districts.

Coal and Shipping

During the year, 3,504,775 tons of coal were delivered to the Board's works. Delivery methods were reviewed and rearrangements made which reduced costs. At the beginning of the year m.v. 'Wandsworth' was commissioned, thus increasing the fleet of colliers owned and managed by the Board to 13. Eight of these ships are of the up-river design built to pass under 17 permanent bridges below Wandsworth and the whole fleet is proving a most economical means of delivering coal to London.

In looking at the financial results for the past year, it is necessary to bear in mind that the margin of revenue over expenditure, less than £600,000, is small by comparison with annual receipts of more than £33 mill. The demand for gas is steadily increasing, as is shown by the number of new consumers connected and the additional domestic and industrial appliances installed.

EAST MIDLANDS

FINANCIALLY, the East Midlands Gas Board's year ended with a net surplus of £280,587 after providing £877,220 for depreciation and £509,592 for interest charges, notwithstanding the rising costs of all commodities with which the Board is concerned.

Gross income was derived from:—Gas sales (247,489,345 therms) £10,183,107, by-products (less direct charges) £2,644,218, rentals of meters, appliances and fittings £562,658, sales and hire purchase of appliances £2,059,749; total £15,449,732.

In its second year (up to March 31, 1951) the Board laid or renewed 198 miles of gas mains; installed or renewed 32,154 services to individual consumers; installed 83,119 cookers; increased daily manufacturing capacity by 5 mill. cu.ft.; sold 600,000 tons of coke and breeze; and produced 23 mill. gal. of tar, 114,000 gal. of benzole, and 307 tons of sulphate of ammonia.

Gas Production and Distribution

Three new carbonising plants were brought into use during the year—namely, Burton-upon-Trent, 2 mill. cu.ft. per day, Northampton, 3 mill. cu.ft. per day and Nottingham, 4 mill. cu.ft. per day.

An additional carburetted water gas plant with a capacity of 2 mill. cu.ft. per day was completed and put to work at Leicester in December, 1950.

Co-ordination of gas production resulted in increased supplies of gas being made available at times of peak demand from works which have been inter-linked since vesting date. Shortages which otherwise would have occurred were thus avoided. Gasworks closed down during the year were: Finedon, Ibstock, Kirkby-in-Ashfield Measham, Melbourne, Shepshed, and Tideswell.

At the end of the year work was in progress on the following linking mains (the undertaking giving the supply is the first named in each case): Sheffield—Whitwell—Clowne; Sheffield (Baslow)—Hathersage; Nottingham — Newark — Bingham—Southwell.

Arrangements have been made with the National Coal Board whereby supplies of gas from existing coke ovens have been increased. The Board attaches importance to the co-ordination of carbonisation activities with the National Coal Board, the Iron and Steel Corporation of Great Britain, and private coke oven owners.

Development Plan

The plan of development includes the ultimate construction of a trunk main which will extend from Doncaster to Leicester with connections to Rotherham, Sheffield, Chesterfield, Derby, Nottingham, and Loughborough, and with branches to many other smaller centres of population. Concentration of manufacture at the larger centres will continue but smaller gasworks such as those at Burton-upon-Trent, Chesterfield, Doncaster, Ilkeston, and Loughborough, although they will probably remain in operation for many years, will not be extended and may ultimately be closed down.

In Northamptonshire, it is intended to expand gas manufacture at Northampton and to continue to take coke oven gas from the works of Stewarts and Lloyds, Ltd., at Corby. In Lincolnshire several schemes for inter-linking are under consideration but, in some instances, the small size of many of the towns and the long distances between them make it difficult to plan linking mains which will show economic advantage.

It is planned to bring a supply of gas to Grantham from Nottingham, which in turn will be connected to the main inter-connecting distribution system.

Commercial Policy

The price of gas remained unchanged virtually throughout the year. Production of gas increased by 6.7%. Industrial and commercial consumers take just over half the Board's gas.

The Board instituted two market surveys, one to enquire into the market for gas cookers and the other for gas water heaters.

One of the more interesting findings was that between 40% and 50% of the gas cookers in each of the towns included in the survey were more than 20 years old, and whereas many of these appliances still gave their users satisfactory service, the survey indicated the extent of the immediate cooker replacement problem.

The Board was continually concerned about the position of coal stocks. During the winter of 1950-51 the overall

stocks of coal reached the low level of 2.3 winter weeks' consumption, and for a period after Christmas 11 undertakings had only 1.5 weeks' stock or less.

Against sales of 600,000 tons of coke and breeze, the demand was such that by the end of the year the summer stock of 35,000 had been reduced to 2,650 tons. In an endeavour to achieve equitable distribution of supplies many thousands of tons of coke were moved by road and rail from surplus to deficiency points. Without this movement many high-priority manufacturing consumers would have had to close down.

EASTERN

THE total expenditure of the Board exceeded its revenue by £169,285, as against an adjusted deficiency for the 11 months ended March 31, 1950, of £77,951.

The increase in expenses for the year ended March 31, 1951, as compared with the total expenses for the 11 months ended March 31, 1950, were as follows:

	£	£
Manufacturing, distribution, administration, depreciation and other charges after deducting revenues from by-products ...		1,213,894
Interest and other charges ...		53,868
		1,267,762
Deduct—		
Increased income from gas sales	1,161,476	
Increased other income ...	14,952	1,176,428
Increased income falling short of increased expenditure ...		91,334
Deficiency, 1950		77,951
Deficiency, year ended March 31, 1951 ...		£169,285

The financial result of 1951 compared with 1950 expressed in pence per therm, is as follows:

	1951 Pence per therm	1950 Pence per therm
Total expenditure	15.75	15.16
Less Revenue from sales of gas	15.43	14.99
Revenue from sales of gas	0.32	0.17

It is the intention of the Board to submit its organisation to a periodical review by business experts with the object of cutting out wasteful expenditure, co-ordinating the work of the various departments, and ensuring that the Board's affairs are being conducted at the minimum cost with the maximum of efficiency. A preliminary investigation in one division has been made and reported upon. The report states that the Board's officials are giving much thought of high quality to management problems and that so far as the fulfilment of its function to the public is concerned the division can continue to be run effectively on present lines.

Schemes for extension and renewal of manufacturing and distribution plant have been approved which it is estimated will cost £2,796,800. Gas-making plant capable of producing 1¼ mill. cu.ft. a day was put to work during the year, and gas-making plant rated at just over ¼ mill. cu.ft. a day was shut down. New plant capable of producing 34 mill. cu.ft. of gas a day is in course of construction, of which 20 mill. cu.ft. a day should be put to work during the current year. The Essex grid is nearing completion, the works at Kelvedon and Witham have been closed down completely, and part of the manufacturing plant at Braintree is being kept in operation until the link at Chelmsford is completed. Gas for these districts is being supplied from Colchester.

To conserve coal, plant operating programmes were amended during the year to allow of a larger percentage of carburetted water gas to be made. In consequence, gas-making costs increased by 1.3d. for each therm of water gas made.

To give a supply of gas to the new towns of Harlow, Hatfield, Hemel Hempstead, Stevenage, and Welwyn, the Board has had to plan works and plant adequate for the estimated requirements of the towns when fully developed. Mains which have to be laid today are considerably larger in diameter than immediate demands require. In consequence, there is a burden in regard to new towns upon existing consumers. The average cost of interest, sinking fund, and depreciation for the Board as a whole is 2.39d. per therm as against 7.57d. to 4.24d. per therm in respect of the new towns.

The planning and presenting of schemes of extension and development are costly, both as to time and money.

Consumers have increased by 6,922 to 671,167; sales of gas at 125,675,000 therms show an increase at the rate of 5% per annum; the unaccounted-for gas shows a reduction of 0.31% from 6.06% to 5.75%, equivalent to 377,025 therms.

Industrial sales are increasing at a very rapid rate. Over the past four years industrial and commercial sales have increased by more than 50% and domestic sales have increased by approximately 15%. For the year to March 31, 1951, industrial sales increased at the rate of 22% over the year to March 31, 1950. The average annual consumption of gas by domestic consumers shows a decrease. The Board considers that one of the contributing factors to this decrease is the gradual change over from obsolete to modern and more scientific gas appliances.

Obsolete Cookers Scrapped

During the year 32,000 obsolete cookers were scrapped and replaced, a saving of approximately 700,000 therms per annum to the gas consumer and 10,000 tons of coal to the nation.

Gas tariffs at vesting date numbering 446 have been telescoped into six. Supplementary charges to prepayment consumers are now on a more equitable basis and are limited to 1.5d. per therm for the first 30 therms per quarter for the hire of a meter and 2d. per therm for the first 30 therms per quarter for those cookers which are not subject to a separate hire charge. The benefit to the prepayment consumer in this regard is £107,000 per annum.

Of new houses erected in the Board's area of supply for which gas is available 75% have been supplied with gas cookers and 65% have each been supplied with a gas cooker and a gas copper, or a gas washing machine. Of converted dwellings, 89% have each been supplied with a gas cooker.

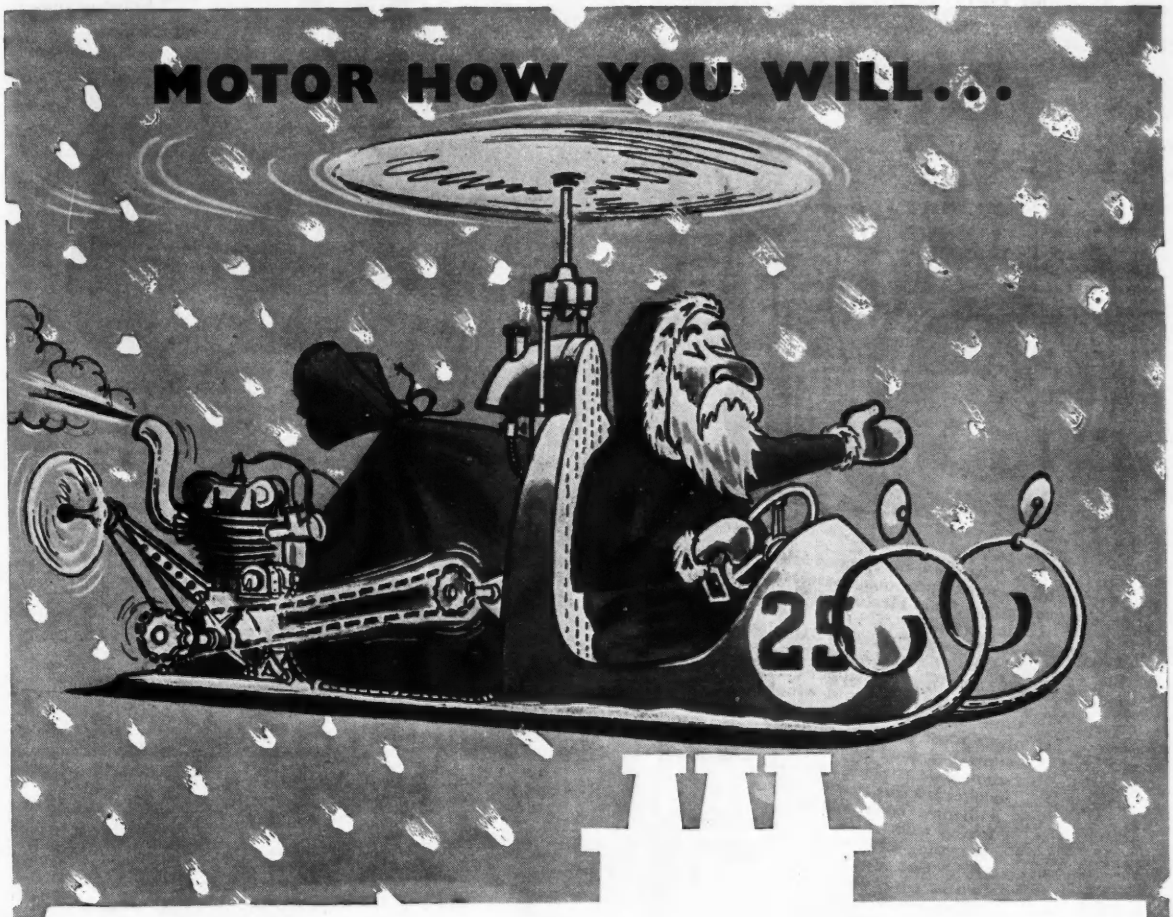
Increased efficiency in its manufacturing and distribution plant has offset increased manufacturing costs to the extent of £93,000.

NORTHERN

BRIEFLY the Northern Gas Board produced a surplus of £11,204 against £5,256 and carried forward £16,460. It sold 146 mill. therms of gas for £5,281,936 to 652,766 consumers, and employed 6,251 men and 485 women. In those parts of the area where equipment for the production and distribution of gas was already fully engaged the growth of the Board's business has largely absorbed new plant capacity added during the year. Although this has postponed the attainment of the Board's aim to make available to all consumers, actual or prospective, a service of complete reliability at all times, progress on several major projects gives confidence that subject to the adequacy of supplies of suitable raw materials, attainment is not far distant.

In the light of experience certain additions were made during the year to the programme of new work outlined in the first report, but in deciding on these additions it was not overlooked that at present costs over-estimation of future requirements may be as injurious by inflating expenses as under-estimation may be by destroying the confidence of consumers. Every endeavour is therefore made to give appropriate weight to each of the factors which may influence demand, and to arrive at a realistic estimate on which to work.

Distribution schemes were approved during the year involving an expenditure of £527,989. The Board purchased



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(The distributing organisation owned and entirely controlled by the producers of British Benzole)

28th November 1951

Most precious possession

Three wise men, being once asked what was life's most precious possession, replied severally: Good Health: A True Friend: A Loving Wife.

Asked the same question today, they would reply in unison: A NEW WORLD 1840 GAS COOKER. With or without benefit of philosophers, the household which has one of these incomparable cookers enjoys all three most precious possessions. For good health waits upon good cooking; a good cooker is a true friend; and a happy cook makes a loving wife.

See the NEW WORLD 1840 Gas Cooker at your nearest Gas Showrooms and find out for yourself why more than two million loving wives say:

...it's a NEW WORLD PRODUCT OF Radiation Ltd for me!

31st October 1951

"A thing of beauty is a constant joy"

So wrote Keats originally, with more accuracy than in his later version about "a joy for ever". There was no gas cooker in the poet's Hampstead kitchen. If there had been, it is doubtful—industrial design of the period being what it was—whether it would have inspired him with a sentiment so admirable.

Today—in an æsthetically more self-conscious, if not more sensitive age—there may often be more poetry in the lines of a kitchen appliance than there is in the Third Programme.

The NEW WORLD 1840 Gas Cooker doesn't write sonnets, but does produce meals which may be lyrical. That it is a thing of beauty you may see in the picture on the right. That it is a constant joy more than two million users of NEW WORLD Gas Cookers will testify.

We suggest that you see this distinguished appliance in your nearest Gas Showrooms.

...it's a NEW WORLD PRODUCT OF Radiation Ltd for me!

NEW WORLD NEW WORLD NEW WORLD

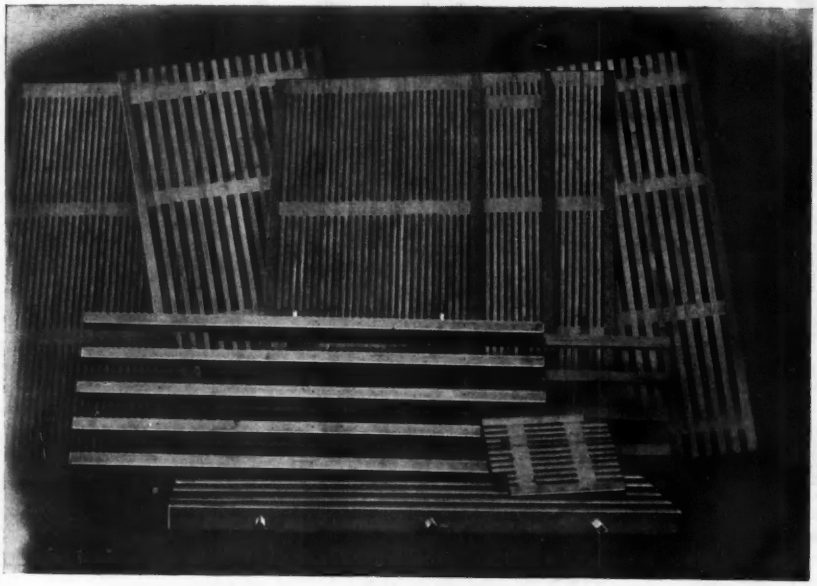
adding PUNCH to New World advertising

14th November 1951
"If you have two loaves, sell one and buy a lily"
By this the famed Li Po meant that man cannot live by bread alone. Neither can he live by Roast Beef, Potatoes, Yorkshire Pudding and Apricot Charlotte alone; nor by Roast Neck of Lamb, Potatoes, Green Peas, Apple Pie and Baked Custard * alone . . . But with the assistance of the Ministry of Food and a NEW WORLD 1840 Gas Cooker, he can have a good try. We can offer you no loaves, no lilies, no roast beef . . . and, no, not even any neck of lamb. We can and do offer the suggestion that you go quickly to your nearest Gas Showrooms and there ask to see these incomparable NEW WORLD 1840 Gas Cookers.
* From "Whole Dinner Menus", page 228 et seq of the Radiation Cookery Book, 40th Edition. Price 5/- nett at all Gas Showrooms.
NEW WORLD
PRODUCT OF Radiation Ltd
. . . it's a for me!

These advertisements for the NEW WORLD No. 1840 Gas Cooker are appearing regularly in PUNCH

RADIATION GROUP SALES, LTD., Head Office & Showrooms: 7, Stratford Place, London, W.1. Tel. MAYfair 6462

NEW WORLD NEW WORLD NEW WORLD



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MOMENTOUS *Measures*

A POSTAL MEASURE No. 16

A word of praise is due these days
to the work of the G.P.O.
They'll send your mail by sea or rail,
or by air if you want it so.
They've bucked things up since that distant day
When the only route was the King's Highway.

A measure of great moment in the development of trade was the establishment by James VI. of Scotland and I. of England of a post service of letter carriers between London and Edinburgh. The return journey had to be done in six days.

Enquiries for our Modern Measure—the "A & M" Optional Meter—are dealt with much more promptly.

THE "A & M" METER

A MODERN MEASURE for the Gas Industry

ALDER & MACKAY LTD.
New Grange Works, Edinburgh
Bradford, Manchester, London, Belfast & Cork

82,942,998 therms of coke oven gas, and with the co-operation of the National Coal Board (Durham Division) a valuable addition to the quantity of coke oven gas available to the Newcastle Division was made during periods of peak demand. This was achieved by adopting a practice used in Belgium and the United States whereby some 2% of its weight of gas oil is added to the coal before it is charged into the coke ovens. Not only does this oil itself produce gas but it also permits of closer packing of the coal in the ovens and hence the carbonisation of a greater weight per charge with a consequent increased yield of gas per oven. It is estimated that nearly 90 mill. cu.ft. of extra gas was made available during the winter by this means.

By-products during the year included 516,534 tons of coke, 93,310 tons of coke breeze, 43,219 tons of crude tar, and 1,174 tons of carburetted water gas tar. The Board distilled 44,037 tons of tar at its St. Anthony's by-product works, comprising 26,659 tons of its own production and 17,378 tons of coke oven tar purchased from works of the National Coal Board.

The overall increase of gas sales was 7.4%, despite the absence of any publicity that would tend to encourage the usage of gas. The Board, in common with all other boards, deliberately suspended its sales promotion publicity and substituted a campaign to assist in the more economical utilisation of its products. The 'Northern' cooker introduced in the previous year is now generally available throughout the area and has met with an excellent reception. Methods of repair and maintenance of equipment have been investigated, and the introduction of several new principles should result in economies in working. For example, the painting of appliances is now followed by an infra-red drying process whereby the paint is dried in a fraction of the previous time.

It is recorded that a well known firm of business efficiency experts has been engaged to examine the Board's commercial organisation and to make recommendations where it is considered that improved methods may increase efficiency.

Close collaboration with the Consultative Council and its consumer committees was maintained during a difficult year when gas prices were increased throughout the area. The assistance and co-operation of the Council and its committees in supporting the introduction of the new basis of charge after having satisfied themselves of its equity was substantial and valuable. Certain local authorities dissatisfied with the tariff called for detailed information from the Board. It was felt, however, that the Gas Consultative Council was the correct channel for the ventilation of complaints concerning the tariff, since it had already been fully considered and accepted by the Council on behalf of the whole body of gas consumers. On occasions where it was felt desirable the Chairman of the Board called a conference of representatives of the Press for discussion of the Board's proposals on matters of public interest—on other occasions statements were issued to them.

WALES

THE year was one of limited but steady all round progress in Wales. Consumers increased from 414,927 to 417,937, and there was an overall increase of 6.66% in gas output. Gas made during the year amounted to 39,940,776 therms, almost the same as in the previous year, but from four fewer manufacturing works. Gas purchased increased from 35,035,149 to 39,329,578 therms, or 12.2%. This was accompanied by a rise in the yield of coke from each ton of coal used in gas making from 7.35 to 7.96 cwt. Research in the use of butane-air mixtures was carried to an advanced stage.

Progress Retarded By Weather

Progress with most of the major schemes of integration and reconstruction was retarded by the poor weather last winter, but on the whole could be regarded as satisfactory. Total gross income amounted to £6,474,188. After providing for all expenditure, including interest and depreciation, there remained a surplus of £182,468, of which £140,000 was transferred to reserves, leaving £42,468 to be carried forward.

The report lists 20 undertakings where there were marked increases in output, notably Llantrisant (88%), Llangefni (61%), and Kidwelly (50%). Increases of the order of 12% were met by several of the larger undertakings.

At Newport and Pontypridd new water gas plants were installed with a total capacity of 3 mill. cu.ft. per day, and there were extensions of other plant at many small undertakings. When work on seven new holders is completed the storage capacity of the Board will be increased by 8%.

Some 210,926 tons of coke were sold during the year, and other by-products sold included 5,449,187 gal. of crude tar, 178,169 gal. of crude benzole, and 5,100 tons of spent oxide. Of the total gas available 50.4% came from coke ovens and 49.6% was made at the Board's own carbonising plants. Progress in the interlinking of undertakings in industrial South Wales was partly responsible for the increased quantities of coke oven gas purchased.

Up to March 31, 1951, 69.8 miles of main had been laid in the South Wales Eastern gas grid; further work authorised and remaining to be completed comprises a first section of 27 miles and a final scheme of 94 miles, making a total of 190.8 miles. Of the western grid, 38.6 miles had been laid leaving 23 miles authorised and remaining to be laid, making 61.6 miles in all. Integration of the whole of the North Wales area between Wrexham and Caernarvon is being considered. Meanwhile, work has started on a grid scheme based on the new Maelor works, Wrexham; 5.4 miles have been laid, leaving 35.6 miles authorised and remaining to be laid. It is hoped that the Maelor works will be making gas in time for the winter load of 1952-53. All ancillary plant should then be completed and the grid system ready for distribution of the output of the new works.

During the year 70,725,984 therms of gas were sold to 417,837 consumers, compared with 66,046,500 therms to 414,927 consumers in the previous year. Average consumption per consumer was 102 therms, but whereas the people of Port Talbot used 159 therms those at Bethesda used only 35 therms (average). Mains and services were laid to 97 new housing estates where there will be 12,860 houses, at a cost of £324,534, but there are still over 300,000 houses in Wales without gas.

Almost 11 mill. therms were sold to commercial consumers, an increase of 11%. Wrexham now sells seven times as much gas to bakers as in 1948. Industrial sales, at 16 mill. therms, showed an increase of 20%. Gas was used by 1,708 large as well as many small, but perhaps no less important, factory users.

The report says: 'If industry is to be attracted and to remain in the industrial valleys of South Wales it is essential that the gas is sold to them at a price which industry can afford to pay and which is no greater than the prices charged to industry in those other areas with whose products it must compete.'

The Board took over the supply at the Bridgend and Marchwiel (Wrexham) trading estates. At Bridgend gas consumption has been more than doubled since 1948 and the same is almost true of Treforest, where consumption is much greater. With a genuine spirit of goodwill and with close co-operation between the makers of gas, a great contribution can be made to the prosperity of the South Wales development area.

Rival Service

The Board has always stressed that the countryman has the right to expect the same standard of service as a townsman and that he should have the same choice of appliances. There are still 41 small towns in Wales where there is a gas undertaking, but no showroom. At the moment it is difficult to get premises and so the Board has brought into use travelling showrooms. In these people can see the latest appliances and listen to lectures on cookery given by the Board's home service advisers; this is one way in which the Board looks after the interests of those living in the rural areas. Its research into the use of butane and propane is another. The third is exemplified by the significant reopening of the Crickhowell gasworks during the year.

The Board made an overall surplus of £42,468. 'For this and its other achievements, the Board is indebted to its friends inside and outside the industry. To them all, the Board extends its warmest thanks.'

(*Reports continued on page 742*)

NORTH WESTERN

THE North Western Gas Board, second largest of the twelve boards, reports a net loss of £305,892 for the year. This compares with a net surplus of £1,119 reported for the first 11 months' trading ended March 31, 1950. The report shows that this result is due principally to a decision taken, in conformity with a Gas Council recommendation, to write off the entire expenditure on retort resetting during the period in which it is incurred instead of over the estimated five-year life of the work. This has meant increasing the charge to revenue account by £541,318, which is the difference between the amount required to depreciate retort resetting expenditure over five years and the actual outlay on this item during the 23 months from vesting date.

During the year the Board carbonised 4.1 mill. tons of coal, which is a 4.3% advance over the previous 12 months, and sold 330.2 mill. therms of gas (5½% increase) to 1,716,738 consumers through 11,389 miles of gas mains. In addition 1,612,767 tons of coke (11.5% increase), 360,666 tons of breeze (17.1% increase), and 287,145 tons of tar (2.2% increase) were sold.

Yields Per Ton

The yield of gas and other products per ton of coal carbonised were:—

Total gas (including carburetted water gas, oil gas, and producer gas)	84½ therms
Coal gas only	73½ therms
Coke and breeze ...	9 cwts.
Tar	14½ gallons
Crude benzole	⅘ gallon

The average cost of the coal carbonised increased by 3½% from the previous year's average cost to 63.05s. a ton, while the average realised price per therm of the gas sold increased by only 1½% to 11.93d., and the average realised price per ton of coke and breeze sold showed no change. This increase in the realised price for gas was due to certain price changes made during the previous year. During the year reviewed no price increases were imposed.

Domestic consumers of gas used 55% of the gas sold, industry 24.4%, commercial users 14.3%, public authorities 3.2%, and public lighting 3.1%.

The Board's policy of enabling householders to replace out-of-date appliances with economical new models by offering easy payment terms was continued during the year and 104,000 new gas cookers were sold of which 44,000 were sold at a charge of one shilling a week including installation costs. The average quantity of gas used during the year by each household consumer was 114 therms.

A 15-year development programme aimed at increasing gas production capacity greatly, and at linking up the more closely-knit industrial regions of the north west with high pressure gas grids has been prepared and work has begun on certain parts of this programme. Thus the linkage of the following distribution systems is under construction:—

(i) Manchester group with Bolton group.
(ii) Leigh with Atherton with Tyldesley (Bolton group).
(iii) Higginshaw (Oldham/Rochdale group) with Manchester group.
(iv) Partington (Manchester group) with Lymm (South Lancashire group).
(v) Manchester group with Winsford with Middlewich with Sandbach (Mid.-Cheshire group).
(vi) Chester with Ellesmere Port (Wirral group).
(vii) Stockport with Marple with New Mills with Hayfield with Whaley Bridge.

The Board authorised expenditure of £3,079,724 during the year on extensions and improvements of its distribution systems, including £1,851,129 on integration schemes, and 173 miles of new main were laid.

Progress was also made with the planning of three major production stations which will add a total capacity of some 40 mill. cu.ft. of gas to the present capacity of the Board's plant. These stations will be located at Partington (Manchester) where a new coke oven plant producing 15 mill. cu.ft. of gas daily is to be erected, Garston (Liverpool), where additional carbonising plant will add 14 mill. cu.ft. to existing daily capacity, and Crewe where there will be a new coke oven plant with an initial daily capacity of 10 mill. cu.ft.

On production works, including extensions and improvements of existing plant, the Board authorised the expenditure of £2,761,330 during the year.

The accounts show that income for the year amounted to £24,932,574, made up of £16,808,053 from gas sales, £7,161,608 from by-products, and £962,913 from sale, hire-purchase, and rent of appliances.

Expenditure

Expenditure amounted to £24,485,529. Of this, gas manufacture accounted for £18,343,907, distribution and consumer service £2,477,257, administration £662,985, employees' welfare £638,962, rates £549,028, and depreciation £1,813,390, of which £264,574 was in respect of the year 1949-50.

To the balance of £447,045 interest, rents, and income relating to 1949-50 add £235,955, making a total of £683,000. After meeting interest charges of £934,691, contributions to central guarantee fund of £34,506, and financing expenses of £19,695, there is a net loss of £305,892 to be carried forward.

The balance sheet total amounted to £45,078,233 at March 31, 1951, against £36,444,887 a year previously. Fixed assets after depreciation were £26,600,171 including additions (after depreciation) of £9,640,822 since vesting date.

Liabilities included British Gas Stock £16,449,469, compensation due to local authorities in respect of the redemption of loans £6,806,563, deposits £1,936,097, mortgage and other loans £1,921,653, and current liabilities £17,685,469.

NORTH THAMES

THE second year of operations of the North Thames Gas Board proved to be one of steady development, marred only by the strike of maintenance men on the gasworks, which seriously affected the production of gas for over three weeks in the autumn. The productive capacity of the works was increased by new plant brought into commission, and the extension of the grid continued, allowing the closing of three of the smaller works. The output of gas for the area as a whole was 6.7% higher than during the corresponding twelve months of 1949-50.

A decisive step was the adoption of a single flat rate price of gas throughout the whole of the area, with standard tariffs for special classes of business, which came into force on January 1, 1951. This, following the standardisation of calorific value, which took place during the first year of working, means that the Board has gone far towards the provision of a uniform supply to all consumers, regardless of their geographical position within the area and of the undertaking that supplied them before nationalisation.

The complete separation of gas production from consumer service, which follows from the adoption of the grid method of distribution and the attendant development of selected works, had already been effected in the Gas Light district before vesting day and in the Romford district during the first year's working. During 1950-51 this separation was made in both the Slough group of districts, and the North Middlesex district.

The revenue account shows a surplus of £2,356,475 after making all proper provision for expenditure, including a sum of £2,046,505 for depreciation and amounts written off. In addition to the amount of £2,046,505 a sum of £96,939 has been charged under other headings in respect of depreciation of office machinery and motor vehicles, making the total charge for depreciation and amounts written off £2,143,444.

In the opinion of the Board this total sum is greater than would have been provided by the former undertakers for the renewal of assets, depreciation, and debt redemption on the practice in force immediately prior to vesting day.

The net revenue account has been credited with the surplus referred to above, and other income represented by interest, dividends, and rents receivable (net), the total being £2,555,203. From this amount is deducted interest payable (gross) £2,133,800, contribution to central guarantee fund £82,606, and financing expenses £25,238, leaving a net surplus of £313,559 on the year's working. Allocations have been made as follows:—

	£
Reserve fund	100,000
Replacement and obsolescence reserve	200,000

and the balance of £13,559 has been added to the amount carried forward.

making the total amount carried forward £469,644.

It is anticipated that within a relatively short time the whole of the Board's accounting practice will be on a uniform basis, with the exception of certain detailed analysis of expenditure which will be limited to the larger gas-making units.

The plant position at the end of the year is given in the following table.

	Installed capacity in mill. cu.ft. per day March 31, 1951
Coke ovens	30.00
Horizontal retorts	107.25
Continuous vertical retorts	70.80
Intermittent vertical retorts	23.50
Carburetted water gas plant	128.85
Blue water gas plant ...	7.50
Oil gas plant	1.50
	369.40

New Plant

Plant under construction or on order on April 1, 1950, but not completed by the end of the Board's second year, included a continuous vertical installation at Bromley with a capacity of 7.5 mill. cu.ft. per day, and a similar unit at Kensal Green, with a capacity of 5 mill. cu.ft. per day; carburetted water gas sets at Beckton with a total capacity of 18 mill. cu.ft. per day, and a similar unit at Kensal total capacity of 6 mill. cu.ft. per day; and two oil gas installations at Southall with a capacity of 1.5 mill. cu.ft. per day each.

During the year the Board authorised for Beckton a further battery of coke ovens with a capacity of 7.5 mill. cu.ft. per day, and three further carburetted water gas sets, each with a capacity of 6 mill. cu.ft. per day. A similar 6 mill. cu.ft. set was authorised for Southall.

The total capacity of production plant of all types under construction or on order at March 31, 1951, was, therefore, 71 mill. cu.ft. per day, spread over four works.

The development of the grid continued, the main from Beckton to Southend, with an extension to Shoeburyness holder station, being completed, as were an additional link between Southall and Harrow and a connection from High Wycombe to Marlow, providing the bulk supply that enabled the latter works to be closed.

During the year the works carbonised 4,528,789 tons of coal, and in addition 30,989,887 gal. of oil and 334,919 tons of coke were used in carburetted water gas plant. The total make of mixed gas, after benzole extraction, was 396,897,319 therms, and 3,168,391 therms of coke oven gas were bought unpurified from the Ford Motor Company, Ltd., and 683,433 therms were bought from neighbouring gas boards.

The quantities of coke and breeze for sale were: Coke, 2,232,170 tons; breeze, 514,674 tons; of which the tonnages used by the Board were respectively 416,295 and 278,853.

The quantity of crude tar produced was 246,140 tons, the yield averaging 10.6 gal. per ton of coal carbonised. 1.51 gal. of benzole were recovered per ton of coal carbonised.

Tar Products

The Board continued to process by far the greater part of the by-product output of the gasworks at its own Products Works at Beckton and Southall, and during the year 227,000 tons of crude tar were treated. This total approached the maximum capacity of the plant, and therefore, as a safeguard it was arranged that an additional tonnage of crude tar be transferred to the South Eastern Gas Board. The quantity so transferred during the year was 2,500 tons. Meanwhile work was put in hand to increase the Board's refining capacity including a further continuous pipe still fractionating unit for crude tar, with a daily capacity of 400 tons, and additional blending and storage facilities for crude tar, road tar, creosote and coal tar fuels.

The quantity of ammoniacal liquor processed was 111 mill. gal. and

improvements for receiving and treating it were authorised.

During the year 14,300 tons of spent oxide were used to make the suplhuric acid needed for the production of sulphate of ammonia from the ammoniacal liquor, and a new chamber acid plant was under construction in order to increase the output. A parallel development in the production of sulphuric acid was the work in progress to double the size of the contact plant which produces acid from waste gases. On completion of the new work the Board expects to be self-supporting in its requirements of sulphuric acid.

More Consumers

The number of gas consumers supplied increased by 14,502, of this number the domestic consumers totalling 13,895. There was little change in the relative proportions of the gas load taken by the different classes of business. Domestic, at 60%, provided the greater part of the demand, while industrial business stood at 18%, commercial at 20%, and public lighting at 2%. The figures for each section of the load are set out below:

Class of Business	*No. of Consumers*	*Therms sold*
Domestic and small commercial supplies:		
Credit ...	441,211	82,474,029
Prepayment ...	1,209,764	137,662,100
Industrial ...	33,717	68,111,532
Other supplies, including commercial ...	98,842	73,188,196
Public lighting	—	5,649,101
	1,783,534	367,084,958
Benzole extraction, power on works and Board's departments other than works ...		12,787,714
		379,872,672

NORTH EASTERN

THE gas manufacturing capacity in the Board's area has been increased during the year by 9.24 mill. cu.ft. per day. Seven inefficient and costly gasworks have been closed down and extensions of the gas grid have been planned to supply a considerable part of the industrial area of West Yorkshire.

During the year the number of gas consumers in the Board's area has increased by 13,216, bringing the total number to 841,674. Gas sold amounted to 143,582,419 therms and produced an income of £7,328,257. Average price per therm was 12.25d.

There were no increases in the price of gas during the year. As a result, the accounts disclosed a deficit of £53,348 on the year's working. Against this, because certain changes in accounting policy made on a national basis were not fully reflected in the accounts for that period, a sum of £92,261 accruing to the first year remained to be credited, making a net balance for the year of £38,913. Added to the initial surplus of £6,670 a total of £45,583 remained to be carried forward.

The Board extended to all employees the educational facilities recommended by the Education Sub-Committee of the Gas Council and, up to March 31, 527 employees had taken approved courses. A County Advisory Committee for education in the gas industry was formed and arrangements have been made to assist local education authorities by offering the services of a number of selected employees as specialist teachers. Schemes have also been devised for training gas fitters, main layers, technicians, home service advisers, etc., and full advantage is being taken of the Watson House training courses of the North Thames Gas Board and the lectures offered by appliance manufacturers and also of the scheme of Training Within Industry inaugurated by the Ministry of Labour and National Service. It is planned to use those personnel who have undergone special training as instructors for other employees.

Development schemes completed and put into operation during the year were as follows:

Carburetted Water Gas Plant (peak load).—Glasshoughton, 4 mill. cu.ft. per day (feeding direct into the grid); Leeds (New Wortley works), 2½ mill. cu.ft. per day; York, two plants each of 2 mill. cu.ft. per day; Elland, 4½ mill. cu.ft. per day.

Coal Carbonising Plant (base load).—Scarborough, 2½ mill. cu.ft. per day; Bridlington, extension of existing plant increased output from 1.245 to 1.87 mill. cu.ft. per day.

Developments in distribution include extension of the grid to South Elmsall and Brodsworth, a 10 in. link main between Elland and Sowerby Bridge, a

(*Concluded on page 746*)

AMERICAN SPOTLIGHT

Items of Topical Interest from the Contemporary Technical Press of Canada and the United States

UNDERGROUND GASIFICATION

UTILISATION of a process for clay removal from under the coal seams is claimed to aid the process of making combustible gases by burning coal in the underground seams. It is stated that more complete combustion is provided by exposing the under surface of the coal veins.

In the underground gasification of coal, at least two wells are sunk into the coal vein. To aid the process a small tunnel is sometimes dug through the coal from one well to the other. Fire is started in one well, and high pressure air or oxygen is forced down the well to support combustion and to drive the resulting gases through the coal vein to the other well for recovery.

In the newly patented process the wells extend through the coal bed into the underlying clay. Water is pumped down under pressure, through the coal and into the clay layer. Water mixed with washed away clay comes to the surface in the space between the pipe and the walls of the drilled well. When the clay has been sufficiently removed between the two wells and the remaining water pumped out, the burning process is started.—(*Gas Age.*)

* * *

NEW COAL PROCESSING SYSTEM

A NEW process evolved by the 'Ultra' Carbonising Corporation of Canada, Ltd., is designed to treat coal, shales, and other carbonaceous matter for the production of power gas, oils, basic chemicals, and all classes of cokes and smokeless fuels at costs which 'will enable industry to pull back on its production charges, mainly by reducing the heavy thermal losses inherent in all processes hitherto available.'

For many years it has been recognised that there are four main phases in coal gasification, each of which has its peculiar characteristic which, could it be isolated, would vastly improve the products obtainable during that particular phase; but it has not yet been found possible to isolate these various phases in a practical manner so as to get the best possible combination of results. These phases are: Dehydration of moist coal; low temperature carbonisation; high temperature distillation; and water gas reaction.

All these are taken into account in the 'Ultra' system, with the result that a thermal efficiency of at least 93% can be guaranteed. This high efficiency is aided by the fact that the uncontrollable high temperature exothermic stage in normal practice, represented by the third phase, is, under the 'Ultra' system, fully controllable, while the heat generated and lost in normal practice is returned to the system and usefully employed.

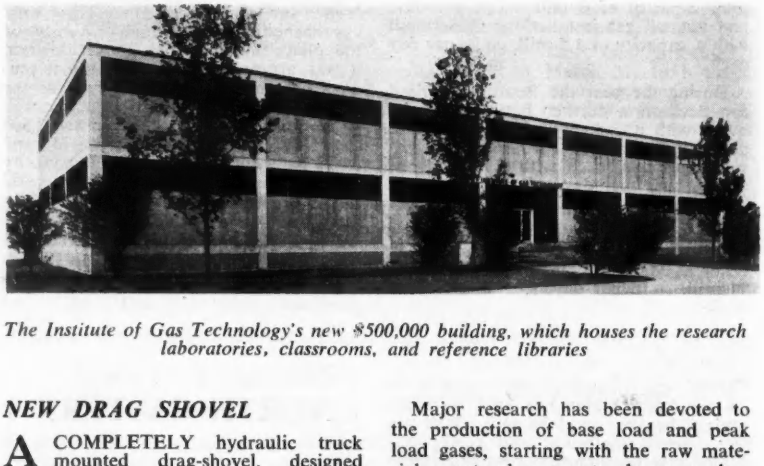
The apparatus consists of five large retorts, one of which is spare, connected together and to the purification system. Each such battery is capable of gasifying from 200 to 250 tons of coal per 24 hours. They are arranged to work continuously and completely automatically. All the apparatus for producing and purifying gas is included in the structure, which even takes care of storage. Sulphur compounds are almost entirely reduced to the soluble variety. According to Canadian estimates, 'Ultra' plants can be constructed for something like 60% of the cost of conventional gas plant.

The carbonisation process can be speeded up or slowed down directly in accordance with demand. Good smokeless fuels are produced as well as high-grade fuel oil.—(*Canadian Gas Journal.*)

INSTITUTE OF GAS TECHNOLOGY

THE Institute of Gas Technology, affiliated with Illinois Institute of Technology in Chicago, has in the short space of ten years grown from a vision to an established educational and research institution, and is embarked upon its second decade of operation with a programme of steadily increasing service to the Gas Industry. The Institute was founded by leaders of the Gas Industry to fill the Industry's pressing need for its own educational and research facility.

The rise of the Institute to its present position in fulfilling all of its objectives did not begin until the end of world war II. Since 1946 it has grown at a rapidly accelerating rate, reaching a climax in less than five years in the construction and equipping of a new building, and acquisition of a pilot plant at the Crawford Station of the Peoples Gas Light and Coke Company. The Institute to-day has a plant investment in excess of $1,000,000.



The Institute of Gas Technology's new $500,000 building, which houses the research laboratories, classrooms, and reference libraries

NEW DRAG SHOVEL

A COMPLETELY hydraulic truck mounted drag-shovel, designed especially for widely scattered, short term jobs, is being produced by Bucyrus-Erie Co., South Milwaukee, Wis.

Special features of the machine, styled the 'Hydrohoe,' include two seperate digging actions; precision control permitting fraction-of-inch movements; hydraulic ejector on dipper; no bails, sheave blocks, or drag ropes on the bucket to interfere with loading; and rapid conversion to clamshell or crane in the field.

The unit can travel at speeds up to 50 m.p.h. on open highways. It is operated by the regular truck engine which furnishes power through a power take-off. The 'Hydrohoe' can work to a 12 ft. 6 in. depth over the rear of the truck, and has a reach of 23 ft.—(*Gas Age.*)

Major research has been devoted to the production of base load and peak load gases, starting with the raw materials: natural gas, natural gas condensates, petroleum, and coal. The work on catalytic cracking of natural gas is paying immediate dividends. There are six tube-type plants and about 17 cyclic catalytic reforming units in operation. The same is true of work on petroleum, especially the selection of oils for high B.Th.U. oil gas. There are some 18 plants in New England which have been or are being converted to high B.Th.U. oil gas as a supplement for natural gas.

These coal projects are long-range studies looking toward improvements in existing processes to meet future requirements when natural gas and oil supplies will be inadequate. Meeting peak loads for natural gas systems is the most pressing problem.

IN PARLIAMENT

Board Members' Salaries

AT question time on December 6, Mr. F. J. ERROLL (Altrincham and Sale) asked the Prime Minister if he would publish, either in the Official Report or in the form of a White Paper, an up-to-date comprehensive list of all members appointed to central and regional nationalised boards of a commercial character, with details of individual salaries, pensions, and expenses allowed, together with a separate list showing all individuals holding more than one appointment; and what those appointments were.

The PRIME MINISTER replied that he was arranging for the publication of this information in the form of a White Paper, which would be published shortly.

Mr. PHILIP NOEL-BAKER (Derby, South) enquired if the return would include similar information in respect of part-time members of the nationalised boards, and if the Prime Minister would also publish some information about the salaries and expenses paid to the directors and managers of the larger industrial, commercial, and financial undertakings under private enterprise.

The PRIME MINISTER: We are dealing with expenses which have to be found out of the Votes provided by this House —(HON. MEMBERS: 'No.')—or at any rate that place a burden on the taxpayers of this country—(HON. MEMBERS: 'No.')—I do not think I will complicate the making of this return by extending it to the inordinate limits that the right hon. Gentleman suggests.

Mr. NOEL-BAKER asked if it was not a fact that the expenses and salaries of the directors of the nationalised boards were paid by the consumer, as were those of private enterprise. 'Why should the Prime Minister and his supporters be afraid of our getting the information for which we ask?'

This brought several hon. Members to their feet; but the Speaker called for the next question.

Scarcroft Enquiry

Both gas and electrical industries figured in written answers on December 6 and 7. Mr. A. MARLOWE (Hove) asked the Minister of Fuel and Power whether he was yet in a position to report on the enquiry which he had instituted into the extent to which any officer of his Department was implicated in the incorrect answer given by his predecessor in the House on December 4, 1950, relating to the Yorkshire Electricity Board.

Mr. GEOFFREY LLOYD: No. It must take some little time to complete an investigation of this kind.

Mr. HYLTON-FOSTER (York) asked the Minister of Fuel and Power if he would take steps to give to municipalities an opportunity to put forward their claim to re-enter the field of electricity generation and distribution; and if he would make a statement.

The MINISTER replied that he was not in a position to make a statement.

CONSULTATIVE COUNCILS

Standardisation

AT a meeting of the South Eastern Gas Consultative Council at Caxton Hall, Westminster, on December 4, under the chairmanship of Councillor A. B. Constable, decisions by the South Eastern Gas Board as a result of representations made by the Council were approved as follows:

Standardised charges for cooking stoves supplied under certain circumstances on temporary loan.

Standardisation of allowances for obsolete cooking stoves.

Revised schedule of charges for services in connection with resetting of consumers' own check meters, other than routine calls, as the result of an alteration in the price of gas.

Gradual elimination of meter cards giving information as to meter readings, etc., where such information is indicated on quarterly gas accounts.

The Council received information from the Board that from the expiration of the lease at the end of the current year, the Streatham showroom would be closed, and requirements of the public would be provided for through the existing showroom at Streatham Hill.

Equalising Meter Rents

THE South Western Gas Consultative Council decided at Taunton on December 12, after a long discussion, to reaffirm its support for the principle of the Area Gas Board's action in equalising meter rents throughout the area.

Complaints had been received from local authorities and private consumers about the new domestic tariffs and meter rents, and many questions my members of the Council were answered by Mr. A. H. Morland (chief accountant of the Board) and Mr. W. N. Curtis (secretary and solicitor). The equalised meter rent for domestic quarterly consumers is 3s. a quarter and the rent for pre-payment domestic consumers is 3d. a therm on the first 15 therms quarterly. Rents for non-domestic consumers vary according to size of meters.

Several members favoured the abolition of meter rents and a rise in the price of gas to cover this, but a resolution on these lines was defeated. The chief accountant stated that to abolish the 625,000 meter rents (totalling £375,000) and include them in the gas prices would entail an increase of ¼d. a therm.

The Council agreed to form a sub-committee to discuss anomalies with Mr. C. H. Chester (Chairman of the Board).

Forcible Entry

Miss I. M. B. WARD (Tynemouth) asked the Minister what action he proposed to take on the recommendation of the North Thames Gas Consultative Council that the 1948 Gas Act should be amended to provide that a police officer must accompany any official sent to force entry into private premises.

Mr. L. W. JOYNSON-HICKS stated that the Minister would consider the Consultative Council's suggestion, but he had only just received it.

Northern Lights

AFTER meeting a deputation representing 14 local authorities in the north east, the Northern Gas Consultative Council, meeting at Newcastle on December 4 under the chairmanship of Alderman Joseph Hoy, decided that no modification could be made in the present assessment of street lighting charges in the areas represented by the deputation. At present each street light is treated as a separate consumer and the authorities requested that they should be granted the rebate applicable to industrial consumers under the Northern Gas Board's tariff.

The deputation was heard in private, but the Council later issued the contents of a letter which the Chairman had sent to Mr. E. J. Waggett, Town Clerk of West Hartlepool, who led the deputation. This stated: 'The Council has determined that no useful purpose would be served in advising the Northern Gas Board that the charges are such as to cause hardship or carry financial injustice to the aggrieved local authorities.

'The decision of the Gas Consultative Council was made following detailed consideration of the effect of these charges on local lighting authorities as a whole and members had before them a complete outline of the serious financial and economic trends of the industry.

'The Council is aware that in certain isolated cases the gas charges to local authorities have had the effect of causing a steep rise in the costs of this service due mainly to factors operating before vesting day, but feels that it would be wrong indeed to perpetuate for all time something which is economically unsound to the industry. The Council will watch very closely future trends of gas prices to local authorities to prevent what in its opinion may become unfair charges for this very necessary public service.'

No Further Concession

The Council also rejected an application by Stockton Corporation for a concession in the supplementary charge for prepayment meter users. The present charge is 1½d. a therm for the first 30 therms, with no charge after this initial consumption. Previously the charge was 1d. for each therm of all gas consumed.

Stockton sent a deputation to the Council led by the Town Clerk (Mr. J. B. Haworth) and the case was heard in private. Subsequently the Council disclosed the contents of a letter which had been sent to Mr. Haworth informing him of the Council's decision. This stated that the Council was satisfied that no evidence was submitted which would justify asking the Board for a still further concession on the charge. The Council felt that it had obtained all that could be obtained at the present time, taking into consideration the financial and economic difficulties which the industry was now facing. The Council was aware that a reduction on the lines suggested would benefit deserving members of the community and vigilance would be used on behalf of the consumers regarding future increases in the price of gas.

A PARKINSON STOVE RETIREMENT

AT a small dinner party attended by the Directors and sales staff of the Parkinson Stove Company, Ltd., at the Grand Hotel, Birmingham, on December 6, Mr. R. J. Rogers, Chairman, presented to Mr. Robin Wilson a silver cigarette case and a case of pipes. The occasion marked Mr. Wilson's retirement after 22 years' service with the company, during which time he was concerned principally with the North Western area. The picture shows Mr. Robin Wilson being presented with the case by Mr. Rogers.

NORTH EASTERN GAS BOARD REPORT — Concluded from page 743

link between Hull and Beverley to give bulk supplies to the latter, and bulk supplies taken from Denby Dale to Skelmanthorpe and Nortonthorpe.

Schemes in progress include the following:

Tingley.—To serve grid. First of two 7 mill. cu.ft. per day carbonising plants. Completion expected 1952.

Bradford.—6 mill. cu.ft. per day carbonising plant. One half to be finished this year, full completion 1952.

Leeds.—5 mill. cu.ft. per day carbonising plant. First half to be completed 1952, full completion scheduled for 1953.

Goole.—Carburetted water gas plant. Completion due 1952.

Selby.—Extension of existing coal carbonising plant to be completed 1952.

New schemes introduced and orders placed include extension of the grid from Tingley; carburetted water gas plants at Halifax, Cleckheaton, and Dewsbury; a second installation of 7 mill. cu.ft. per day carbonising plant at Tingley; and carburetted water gas plants at Keighley and Otley.

During the year 99.35 miles of new mains were laid and 4.4 miles of mains were re-laid. The total mileage in the area was increased from 6,243 to 6,335.

The production of carburetted water gas in excess of that planned was equivalent to a saving of approximately 75,000 tons of coal. Nevertheless, coal stocks were depleted and at March 31 were 18,000 tons less than the previous year. Increases in the price of coal and transport charges during the year were equivalent to a £400,000 increase in the full year's working.

Total output of gas was 32,605 mill. cu.ft.

During the year detailed statistical examination of all current methods of charge took place in order to ascertain the effect on revenue of the introduction of a standard form of tariff.

The total number of appliances sold was 116,122 and their value £1,465,884, an increase over the previous year in spite of some appliances being in short supply. The estimated annual consumption of new plant installed in industrial and commercial establishments during the year is 3,599,420 therms.

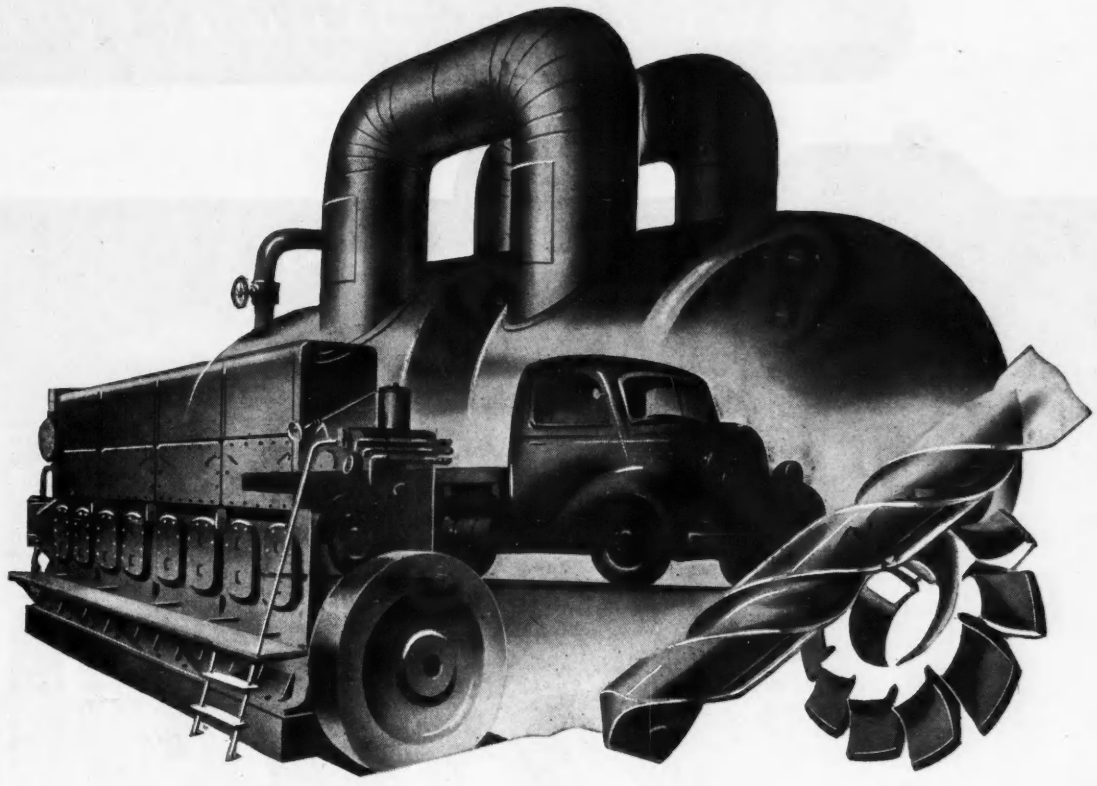
The net increase in the number of meters installed was 7,951. New services totalled 9,689 and re-laid services 15,743.

The coke supply was affected adversely by the withdrawal of rationing, the continued export demand, and the increased make of carburetted water gas, and it became necessary to introduce a system of priorities to safeguard supplies to essential services. At March 31 coke stocks were only 3,043 tons. New screening and storage plants have been ordered and technical tests have been carried out with a view to improving the quality of coke produced by the Board.

Preliminary consideration has been given to a revised price structure for coke with the object of rationalising the many varied prices fixed arbitrarily at the beginning of the last war. Due to increased costs of coal, labour, and transport, an increase of 6s. 11d. per ton had to be made in the retail delivered price of coke.

TRADE UNIONISTS AT BOARD'S TECHNICAL HEADQUARTERS

HEADED by Councillor Tom Eccles, J.P., Manchester District Secretary, a party of 22 officials of the National Union of General and Municipal Workers recently visited the headquarters of the North Western Gas Board's Technical and Planning division at Bradford Road, Manchester. Our photograph shows the visitors in the drawing office with Mr. W. Hodkinson, Chief Technical and Planning Officer of the Gas Board, on the left.



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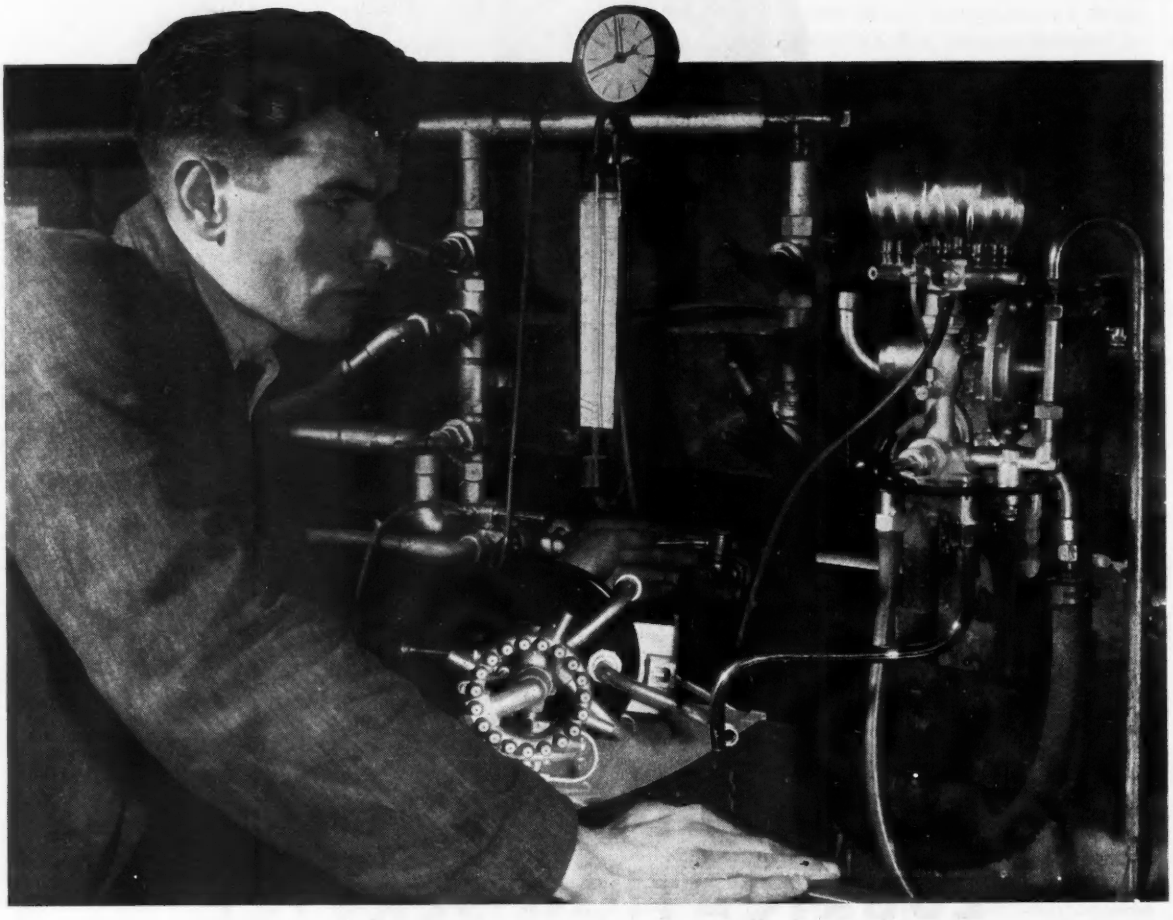
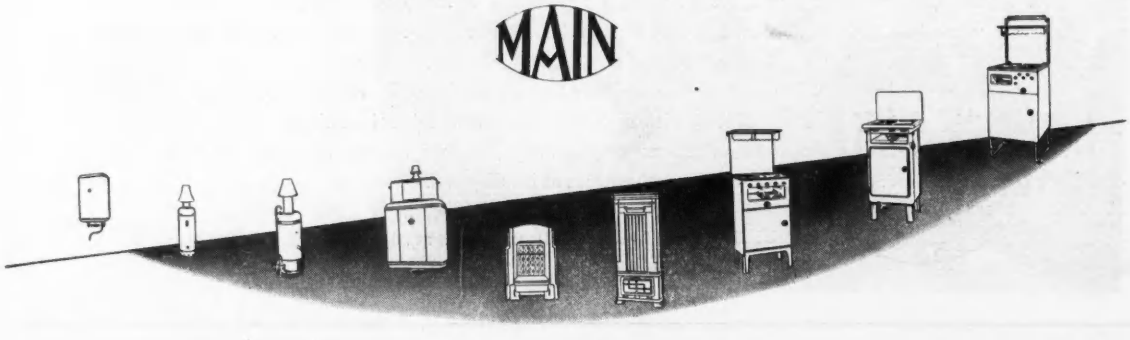


Testing the action of the water actuated gas-valve of a sink heater.

main GAS APPLIANCES

COOKERS • SPACE HEATERS • WATER HEATERS

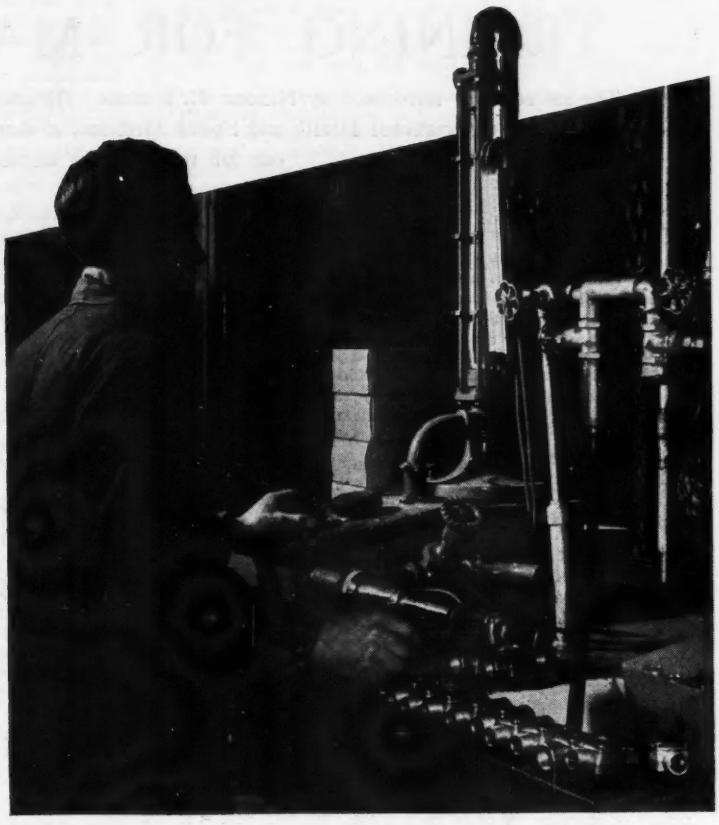
MAIN



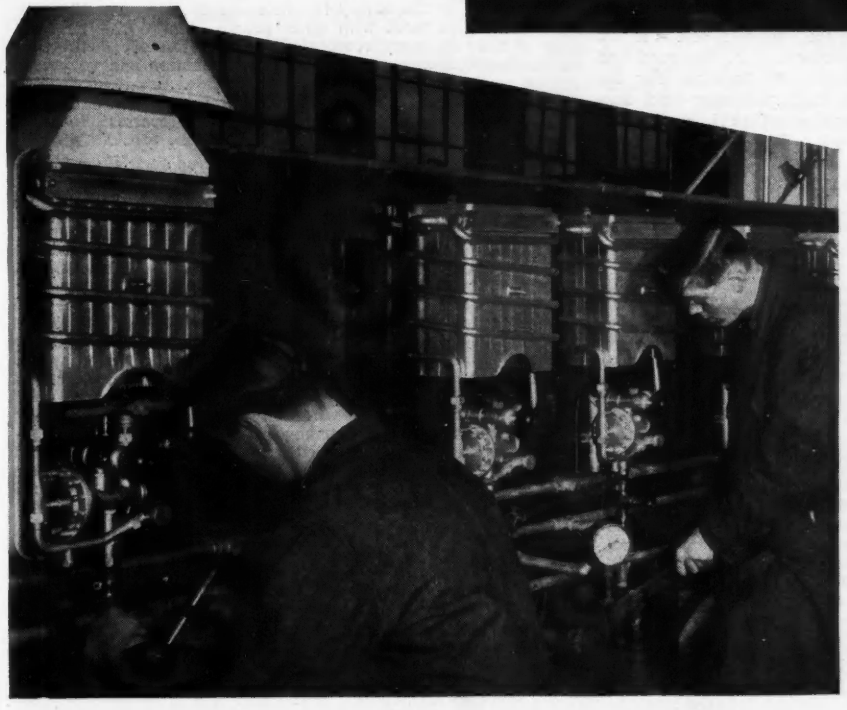
MT/651

IN GAS APPLIANCE MANUFACTURE

Accurate routine testing is a necessary and never-ending part of the manufacture of Main water heaters. Before assembly into a complete appliance, burner units, thermostats, governors etc. undergo, each one, a searching and individual test. Finally the complete heater is put through thorough working tests to ensure that everything is in perfect order.



Testing gas-pressure governors.



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TRAINING FOR MANAGEMENT

The subject was introduced by Norman C. Rimmer, Director of the Training Wing, Roffey Park Institute of Occupational Health and Social Medicine, a short synopsis of whose remarks precedes our full report of the discussion.

PREPARATION for management (here taken to include both education and training) has never received so much attention as it is receiving at the present time. The growth of management institutions and the provision of educational facilities on a national basis are significant developments, and within industry training programmes in this field have become matters of priority.

Management is defined as that activity which encompasses (i) policy making and planning; (ii) administering and interpreting; and (iii) decision making and operating. The activity of management involves all the executive processes from planning to the execution of plans. Those engaged in the function include all from first line supervision to the highest executive authority. In effect, management is the process of getting things done through agency of a community.

Two kinds of consideration are involved: Those primarily related to the things to be done—*i.e.*, the goods and services, the *raison d'être* of the organisation, and its purpose—and those related to the wellbeing of the community, the agency through whom alone that purpose can be achieved. Education for management is the process of developing competence in the exercise of managerial functions and responsibility.

The present climate of management makes a special demand on the manager. Aims, scope, methods, and nature of management have changed and are continually changing to meet the economic and social needs of the day. That 'good managers are born' may have some truth in it, but is the policy of learning by experience alone adequate, and is it fast enough? Many feel that the process can be hastened and effectiveness increased by education and training, for the achievement of technical prowess in a particular field does not necessarily include the acquisition of skill in directing the activities of a group of people. The upward path of increased responsibility tends to demand less technical and more administrative skill with every step.

Five Considerations

Can education and training help the potential and junior manager? 'Not to advance is to slip back' is an old Chinese saying. No manager can 'stay put.' How can the established manager be provided with the opportunities which will enable him to function at the level of the times? Education and training for management involve five considerations—the job, the scope, the aims, the methods, and the communications. The first makes certain demands in terms of personality, knowledge, and skill; the second must have regard to technical, human and administrative aspects and orientation; the third will include analytical ability, social responsibility, strategic thinking, and decisiveness. Methods involve both external and internal resources and personal guidance under both, while the last, communications, is important as a subject of study and as a basic skill in management.

Fundamental to any programme of training for management is a clear view of the broader objects of industry and of the particular industry, and of the function of management therein. These viewpoints will influence decisively the need, the type, and the method of preparation for management.

As Sir Richard Livingstone said, it is the weakness of great and complicated societies like our own that they tend to concentrate on the techniques of their life. But education, while it must provide for these, can only base itself on them at the expense of neglecting more important things. Such an education will produce a mere technician, by which is meant one who understands everything about his job except its ultimate purpose and its place in the order of things.

DISCUSSION

Dr. J. Burns (North Thames) said the engineer, accustomed to things material, might very well find himself out of his depth when it came to assessing in words the requirements of a good manager. It was, of course, always well to know what was, in fact, required when one set out to train anybody for a job; and when a technically and materialistically minded engineer came to discuss such a subject he would attempt straight away to accord a particular value to the individual qualities which made up the successful whole. Opinions would obviously differ very widely on the amount of assessment of each individual quality; but Dr. Burns said he would attempt to set out, as he saw them, the requirements of the successful manager in a technical job. If they considered all the qualities to add up to 100%, he would suggest the following breakdown:—

Technical ability	40%
Good commonsense, which was the basis of good judgment	12%
Vision, or the ability to think ahead	12%
Ability to work with other people	12%
Ability to carry responsibility	10%
Mental energy, coupled with determination and strength of purpose	5%
Cheerfulness	5%
Ability to accept hard knocks and reverses without being perturbed	4%

Ambition, in Dr. Burns's opinion, played such a very small part in the good manager that it could be entirely discounted. The really successful manager did not require to be ambitious. He would get there without it.

It was interesting to look at the practical way in which one would seek to develop these characteristics in a young man. Early education must play a tremendous part in the development of these characteristics, and Dr. Burns considered that the ultimately successful manager must have a bastically broad education. If he was going to deal with material things he certainly should have a classical education before he started specialising in his technical education. When he had finished with his technical education he should have the trained mind which would ultimately allow him to meet the technical requirements of the good manager's position. It was their duty at that stage not only to further his technical knowledge, but to accord to the young man the opportunity of developing some of the other qualities which were necessary in the good manager.

He would like to illustrate at this stage how they sought to do this in the North Thames Gas Board with their young pupil engineers. The young pupil engineer was selected in the first place for an interview, with full information from his Professor as to his scholastic qualities and general character. Interviewing young candidates was a highly skilled job, but the competent interviewer should be able to assess with reasonable accuracy whether the candidate was likely to fulfil the requirements or not. When the successful candidate

was brought in he set out on a three-year training period. During the first 18 months he spent his time rubbing shoulders with engineers at different works, just learning something about the operation of different types of gasmaking plant and getting to know the feel and the atmosphere of works' organisations.

At the end of 18 months, the time was ripe to try to develop some of the other characteristics. Above all, he was given the opportunity of exercising his judgment, of developing his self-confidence, of taking responsibility, and of working as the member of a team. To do this he was given the post of shift superintendent at one of the works, on which he operated round the clock; and when he was on night shift he had to carry the immediate responsibility of the whole works, backed by the entire engineering organisation of the Board at the other end of the telephone. In this position he had to make his own decisions, exercise his judgment, and learn to take responsibility by having to take it. At the end of 18 months on shift work, he should be fitted to take his place as an assistant engineer with one foot, at least, on the bottom of the ladder; and thereafter the speed with which he climbed that ladder would depend entirely on himself. It might be mentioned, too, that while he was in the shift superintendent stage he was in active competition for the better posts with men who might not have had the advantage of his technical education but who had gained technical knowledge through experience only on the works.

Mr. W. A. Evetts (Eastern) observed that nearly all of them had to submit to management as well as manage. Among the attributes must be included that of directing human activities. Human relationship was a most important part of management; their particular approach to any one must be in accordance with their knowledge of that individual. If they could get their human relationships right then other things would go right. All the same, nothing could take the place of practical training. One must get on to the job and learn all its pitfalls before one could manage.

Mr. H. S. C. Everard (North Thames) said that aspirants to management must learn to distinguish quite clearly between the wood and the trees. They must see all the jobs the industry was trying to do. He suggested that pupils should spend a period with a country undertaking where they could see every operation within a small compass. Mr. Rimmer had not mentioned sympathy among the attributes of a good manager. Wherever they went, no matter what the job they were doing, there was always the danger of becoming too impersonal. Therefore, the manager must have sympathy.

Easy to be a Sceptic

Mr. G. Dougill (North Thames) commented that it was very easy to be a sceptic on this subject. The attitude to management had completely changed; in his young days labour was plentiful and capital in the form of plant and machinery was relatively scarce. In those days when one joined the staff of a works one was privileged to help operate the machinery. The emphasis was now entirely reversed; they were faced with a shortage of labour but any amount of machinery—and they had to persuade the labour to run the machinery. This called for a change of approach on the part of the people responsible for running industry. The first line of management was the foreman. Mr. Dougill said he had appointed many foremen and he had always tried to implant one thought in them by saying: 'I cannot appoint you a foreman. There is only one man who can make you a foreman and that is yourself.' Although technical ability was essential, there was one thing they could not teach a man—and that was leadership.

Mr. A. G. Bird (West's Gas Improvement Co., Ltd.) emphasised that one of the essential qualifications for management was knowledge of the job. In assessing the attributes he would put experience at 50%. Another point was 'know your weaknesses,' which he assessed at 10%. Again, if they did not like the atmosphere in which they were working they would never make a good manager; they must like their job. Another big factor was that they existed by paying for their life; they had to buy things in order to live. Therefore, a knowledge of finance also came into the picture. Then they must appreciate the ability of their staff; be ready to help those who knew a little more than they did and sort out those with brains.

Mr. **J. H. Dyde** (Eastern) said that the presentation of this paper was opportune, for their industry had not yet crystallised its ideas or formulated its plans on this subject with any degree of finality. Awareness of the rôle of management in their national life was greatly stimulated when industry had to be rapidly geared to a war potential in the struggle for freedom. It became evident that effective, vital, and inspired management—summed up in the word 'leadership'—was needed. The question therefore arose, which had in many ways been answered by Mr. Rimmer, what teaching could be given *about* management and what training could be given *in* management to bring out and develop the skills of leadership so often lying latent in the individual at all levels of industrial and commercial life? Mr. Rimmer had indicated how this task had been and continued to be tackled.

There were courses of training within the industry, covering all levels of management and concerned with the development of the three skills of instructing, leadership, and improvement of method. There were technical colleges and institutions which had answered the challenge by offering increased range of part-time courses in management. Then there was the Institute of Industrial Administration, which had for some time provided a diploma in management, and which had now been incorporated in the British Institute of Management, set up with Government assistance to provide a centre for the study of management subjects and to encourage and advise on schemes of training and generally to co-ordinate the many organisations springing up to cater for this need. The gas industry, together with other nationalised industries, contributed handsomely to this Institute. Another post-war venture had been the establishment of the Administrative Staff College at Henley. This college set out to give a wider view at the higher levels of management and was for those already in positions of responsibility in different spheres. It presented them with the opportunity to exchange ideas and experiences at an age when their views had been formed but not fixed. This college was residential and expensive. The gas industry had recently become a supporter and hoped soon to be allocated a small number of places among the limited membership available.

The Part of Professional Institutions

What was the part which professional institutions like theirs could or should play in the creation of managers, asked Mr. Dyde. Should they formulate a course in management studies specific to the technology of their industry? Such a course would include what was aptly named in the Urwick report the 'tools of management.' That was the appreciation of the data on which the manager based his judgment and plans, such as works costing, budgetary control, stock control, production planning, personnel management, and all those special techniques and devices. Or should they leave it to the bodies specially set up, which he had already named, to give education of a general character in management studies? It must always be remembered that professional and academic bodies, in teaching management studies, were not and could not claim to be producing managers. Only industry itself could do that. Industry alone could provide the real situations and challenges out of which leadership sprang.

The great responsibility, to Mr. Dyde's mind, therefore lay with the industry itself—in their case with the area boards—to seek diligently to observe the qualities of skill and leadership and provide fertile ground on which those qualities, once they emerged, could be developed by presenting successively greater challenges to the individual. As to the tools of management, the actual management studies, Mr. Dyde was uncertain whether the area boards should best work in association with the technical colleges, which provided courses for engineering studies, or with other organisations set up for that specific purpose, or whether the industry as a whole ought to develop a sort of 'Watson House' centre of management studies. One of the leading banks had recently set up a central organisation of this sort where promising young men were sent to receive an appreciation of the purpose and scope of banking and to bring out those very qualities of leadership and initiative which were sought. They also sent their managers for refresher courses when they had the benefit of talks and lectures from outside experts in finance, law, and general industry. Mr. Dyde felt there was one danger in this system—and that was the tendency to develop insularity, whereas management generally should be given an opportunity for the reception of ideas from the widest possible field.

Lieut.-Col. J. A. Gould (South Eastern) said that management, as he saw it, included the following requirements: The possession of innate qualities, including the ability to organise, command, co-ordinate and control, and the teaching provided by experience. Next, the knowledge of, and ability to use,

the generally recognised tools of management, such as accounting, statistical method, costing and financial control, office organisation and method, law, etc. Most engineers had the first of these requirements, but unless they acquired the so-called tools of management by special training they were unlikely to possess them. In this connection other men whose professional training was that of an accountant, secretary, or similar post on the commercial side necessarily had to learn some of the special subjects referred to above. For that reason it had often been stated that they had an advantage when consideration was being given to likely candidates for managerial posts.

The engineer was usually so deeply engrossed in his technical work and problems that the knowledge he gained of special management subjects was often only picked up as he went along. The manager had to use scientific methods in co-ordinating the views of persons with technological training and must therefore have a knowledge of scientific thought; and as he had a great deal to do with men and women and the arrangements under which they could co-operate most effectively with each other he must be a humanist. Col. Gould held the view that the capacity for leadership was not entirely an intellectual matter. If a man had not interest, judgment, or tact in dealing with human beings no theoretical study would instil it into him. The exercise of this quality was by far the most important feature of good management. It was true to say that it was the basis of the great majority of decisions which occupied the time of those in the highest positions.

On the question of whether management could be considered as a science, Lieut.-Col. Urwick, the well-known expert on management matters, in a paper on 'Education for Management' given to the Royal Society of Arts in 1948, said: 'Management, like medicine, is an art—an art which we have been practising and must go on practising whether it is described as a science or not. The important point is that in our practice we should use as much exact knowledge as is available; be active in acquiring further exact knowledge; and display integrity in the exercise of the judgment so that it is based as far as possible on objectively measured fact, and not on guesswork, emotion, or interest.' Col. Gould thought that specialised training in management should be available to selected men before they reached the age of 40. The fighting services provided by means of their staff colleges facilities for training in leadership and management at a stage when their officers had had sufficient experience to derive the maximum benefit from such education. Field Marshals Lord Montgomery and Lord Alexander attended the same staff college course when they were under 40.

In conclusion, Col. Gould emphasised the point that management in its general application applied to all supervisory grades and quoted some further remarks of Col. Urwick with which he was sure they were all in general agreement: 'There is no chance of any serious-minded man who cares about management forgetting that the key men in his works are the foreman and the working charge-hand—the men in charge of primary working groups. They are the 'company' to the rank and file of workers, and no amount of skill and brilliance on the part of the managing director is of the least value until they have filtered down to the man or woman in the line. They are the people who do the job, not the managing directors.'

Mr. C. R. M. Croft (South Eastern), in proposing a vote of thanks to Mr. Rimmer for his address, said that there was no point with which they could seriously disagree. Everything Mr. Rimmer had said was important in its way.

Mr. J. D. C. Woodall (South Eastern), seconding, observed that by far the most successful organisation that the British Government had ever run was the Royal Navy—though he said this with all respect to the other branches of the forces. The reason was simple; they selected their officers very carefully, but, far more important, they were able to give those men a considerable degree of responsibility at a very early age. That was why the Naval officer was, in his opinion, so greatly superior to his counterpart elsewhere. Mr. Woodall recalled that the late Sir David Milne-Watson was only 31 when he was appointed general manager of the Gas Light and Coke Company, and he had always been very keen to give young men responsibilities. Mr. Woodall himself and many of his colleagues had been given many opportunities. Those positions of responsibility no longer existed. There were now few jobs of real responsibility into which the gas industry could put its young men. There was, he concluded, one quality which he stressed above all others, and that was enthusiasm. It was a vital and infectious quality.

GAS PRESSURE GOVERNOR WITH GLASS VALVE

By P. STRIPP, North Thames Gas Board.

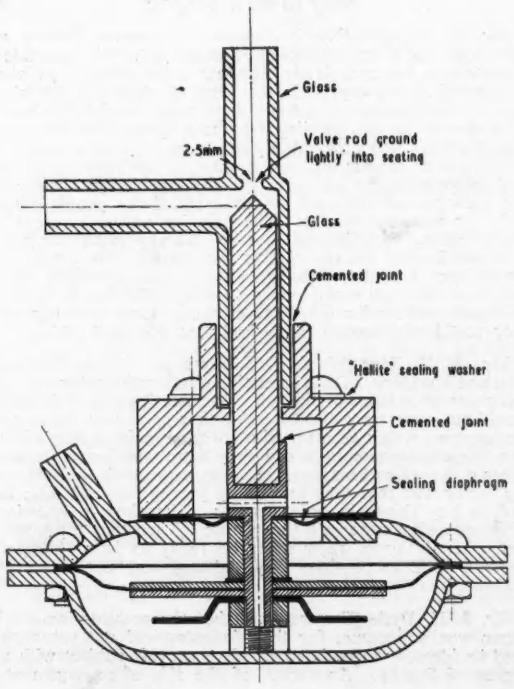
SEVERAL attempts have been made to employ a gas pressure governor with a glass valve in laboratory apparatus, for H_2S determination, etc. Governors such as the G.L.C. 100D have been modified by fitting a glass extension to the body, with a glass valve on a thin glass spindle. This operated fairly well, but owing to the fragile nature of the valve spindle frequent breakages occurred. Other governors have been made in metal with various forms of protective coating—*e.g.*, enamel, or rhodium plating—but these have been found to be impracticable.

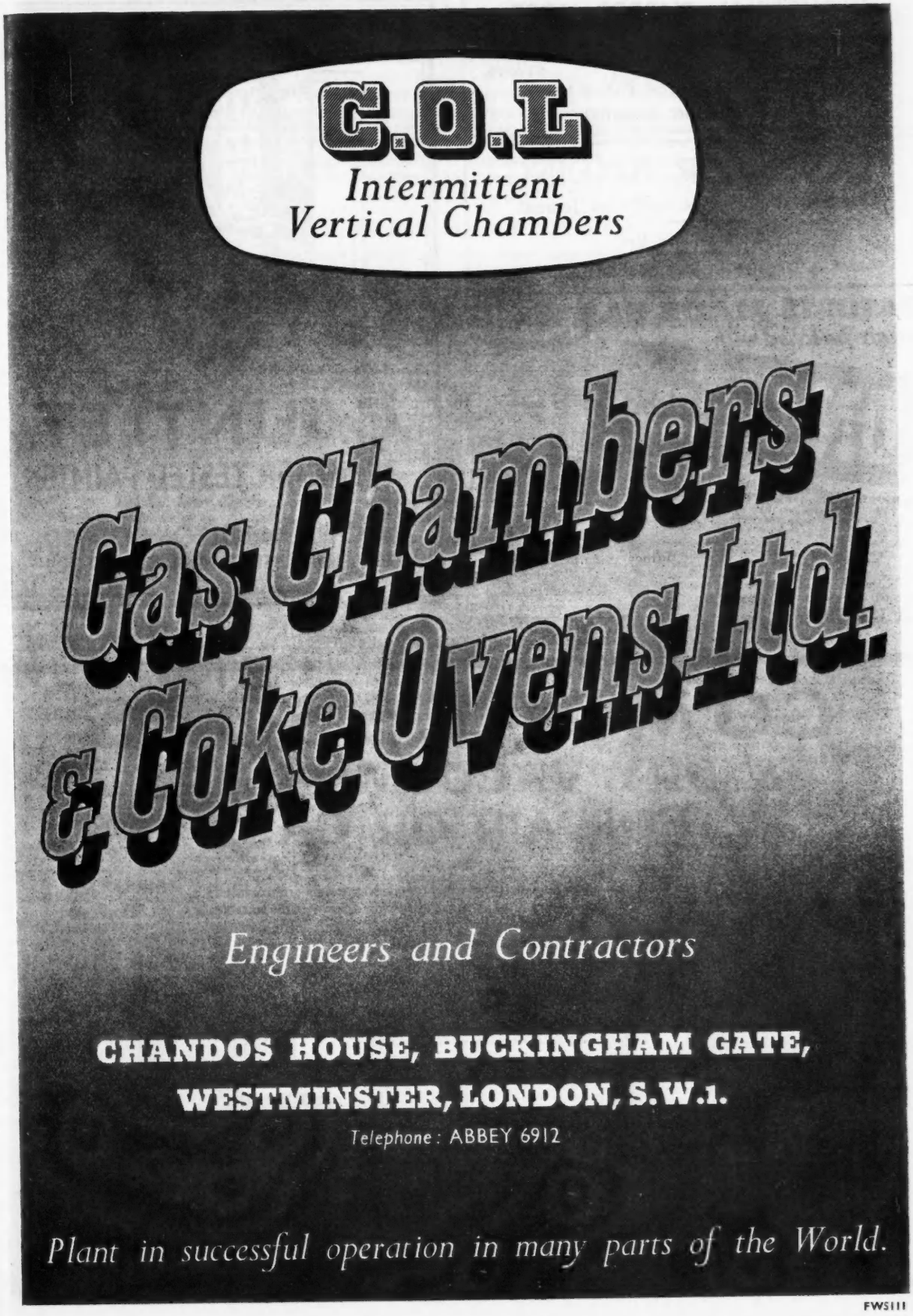
A new design is here described in which a glass valve and spindle, of robust construction, are used.

The governor is shown in section in the accompanying diagram. The main body and parts are in brass or other suitable metal. The small clearance between the valve rod and the outer glass tube prevents contamination of the main flow of the gas by the metal body or the diaphragm.

The pressure on the outlet side of the valve is communicated to the underside of the main diaphragm by drilled holes in the lower part of the valve spindle. As the governor is normally required to work as a differential pressure governor, a connection is made above the main diaphragm. A sealing diaphragm separates this from the inlet pressure.

When used in conjunction with apparatus for determination of H_2S in gas, a gas rate of 0.5 cu.ft. per hour is required. This is obtained by governing the pressure drop across an orifice, usually a short length of capilliary tubing. The governor described gave a pressure drop of 1.5 in. w.g. with an inlet pressure of 15 in. w.g. Inlet pressure variation from 5 in. to 30 in. resulted in a change of pressure drop from 1.40 in. to 1.66 in. w.g. This represents a total change in rate of flow of gas of only 9%, or −3% to +6% of normal. If greater accuracy was required the dimensions could be modified, but for normal use the performance is satisfactory.

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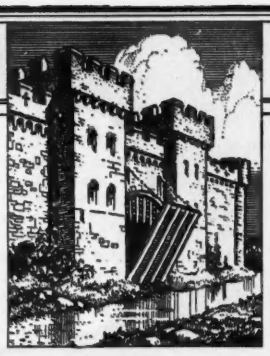

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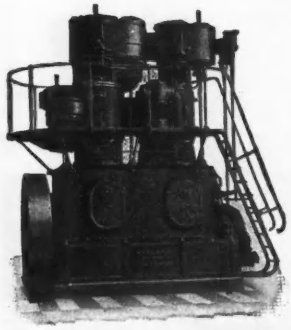

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Applications, endorsed "Assistant Chemist," giving personal details, particulars of training, qualifications and experience, together with the names and addresses of two referees, should reach the General Manager, North Western Gas Board (Oldham-Rochdale Group), Gas Offices, Dane Street, Rochdale, within twelve days of the publication of this advertisement.

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Applications, stating age, qualifications, experience and details of previous appointments, together with the names and addresses of two referees should reach the Secretary, North Western Gas Board, Bridgewater House, 60, Whitworth Street, Manchester, 1, within fourteen days of the publication of this advertisement.

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SHIFT SUPERINTENDENT.

APPLICATIONS are invited from suitably qualified persons for the above position at the Basford Works of the Nottingham Undertaking.

Candidates should hold the Higher Grade Certificate in Gas Manufacture of the Institution of Gas Engineers, or an equivalent technical qualification.

The plant includes Woodall Duckham vertical retorts and Humphreys & Glasgow C.W.G. plants.

The salary offered for the post is in accordance with A.P.T. Grade VIII (£540-£620 per annum) according to qualifications and experience. The appointment is superannuable and the successful candidate may be required to undergo a medical examination.

Applications stating age, qualifications and experience, together with the names of two referees should reach the undersigned not later than December 29, 1951.

K. L. PEARCE,
Divisional General Manager.

East Midlands Gas Board,
Notts. & Derby Division,
Friar Gate,
Derby.

(*Classified advertisements continued on Supplement* 4)

APPOINTMENTS VACANT (ctd.)

SOUTH WESTERN GAS BOARD

DIVISIONAL DISTRIBUTION ENGINEER.

APPLICATIONS are invited for the appointment of DISTRIBUTION ENGINEER at the Board's Southern Divisional Headquarters at Torquay.

Applicants, who should be not more than 45 years of age, must be well qualified and have had wide experience, with practical and theoretical knowledge in carrying out distribution schemes by low, medium and high pressure.

The successful candidate will be required to collaborate with Sub-Divisional Distribution Engineers in planning of integration mains, preparation of housing scheme projects and in the installation of all types of domestic and commercial equipment; collate and maintain appropriate Divisional records; prepare reports for presentation to the Divisional Executive Committee and examine and report on proposals covering all Distribution matters. Knowledge of Distribution Costing is essential and candidates must be of proved organising ability.

The salary will be £1,500 per annum and the appointment will be subject to such Superannuation Scheme as may be adopted by the Board. The successful candidate will be required to pass a medical examination.

A Board's house is available in the Torquay area at an economic rental.

Applications, stating age and giving particulars of ducation and training, qualifications and experience, together with the names of two persons to whom reference can be made, should be submitted to the undersigned not later than January 4, 1952, and should be endorsed "Distribution Engineer."

W. N. CURTIS,
Secretary and Solicitor.

9a, Quiet Street,
Bath.
December 13, 1951.

SOUTH WESTERN GAS BOARD

DIVISIONAL PRODUCTION ENGINEER.

APPLICATIONS are invited for the appointment of PRODUCTION ENGINEER at the Board's Northern Divisional Headquarters at Bristol.

Applicants, who should be not more than 45 years of age, must be well qualified and have had wide experience in works planning, construction and maintenance, as well as Coal Gas and C.W. Gas manufacture, By-Products recovery and Power plant.

The successful candidate will be required to collaborate with Sub-Divisional Production Engineers as necessary in matters concerning Production, including bulk buying and coal allocation; collate and maintain appropriate Divisional records; prepare reports for presentation to the Divisional Executive Committee and examine and report on proposals covering works extensions and plant renewals, integration and building and constructional projects.

Candidates must have full knowledge of production working results and maintenance costs, and be of proved organising ability.

The salary will be £1,500 per annum and the appointment will be subject to such Superannuation Scheme as may be adopted by the Board. The successful candidate will be required to pass a medical examination.

Applications, stating age and giving particulars of education and training, qualifications and experience, together with the names of two persons to whom reference can be made, should be submitted to the undersigned not later than January 4, 1952, and should be endorsed "Production Engineer."

W. N. CURTIS,
Secretary and Solicitor.

9a, Quiet Street,
Bath.
December 13, 1951.

AUTOMATIC Temperature and Safety Controls: FOREMAN required to take charge of assembly shops. Good pay and prospects for skilled and energetic man with similar experience. Please give full details in your written application, or 'phone Works Manager for appointment.—Perl Controls Limited, 672, Fulham Road, London, S.W.6. RENown 2323.

SOUTHERN GAS BOARD

PORTSMOUTH, GOSPORT & BOGNOR REGIS GAS UNDERTAKING.

VACANCIES exist for qualified First, Second and Third Class GAS FITTERS within the area of the above Undertaking, principally at Portsmouth and Bognor Regis.

Applications, giving full particulars of training and experience should be addressed to The General Manager, Portsmouth, Gosport and Bognor Regis Gas Undertaking, The Square, Portsmouth.

EASTERN GAS BOARD

TOTTENHAM DIVISION.

APPLICATIONS are invited for the following appointments:—

POWER ENGINEER—

WILLOUGHBY LANE WORKS.

Candidates should be Corporate Members of the Institution of Electrical Engineers or hold an equivalent qualification.

The duties will mainly comprise:—

(*a*) Technical supervision of operation of steam and electric power plant.
(*b*) Supervision of electrical installation work, maintenance of electrical plant, including supervision of craftsmen.

Residence, adjoining the Works, will be available in this case at a reasonable rental.

MECHANICAL ENGINEER—

DIVISIONAL OFFICE.

Candidates should be Corporate Members of the Institution of Mechanical Engineers or hold an equivalent qualification.

The responsibilities cover the eight gas works of the Division and the duties will mainly comprise:—

(*a*) Supervision of all mechanical requirements under the Factories Acts, *e.g.*, steam boilers and pressure vessels, gasholders, lifting appliances, etc.
(*b*) Safety precautions.
(*c*) Inspection of mechanical plant at makers' works and supervision of erection.

(The Works Engineers in each locality are responsible for mechanical maintenance).

MECHANICAL ASSISTANT—

PONDERS END WORKS.

Candidates should be Corporate Members of the Institution of Mechanical Engineers or hold an equivalent qualification.

The candidate appointed will be one of the two main technical assistants of the Works Engineer, the other being the Production Assistant. He will be responsible for mechanical and structural maintenance and must be capable of organising this work on a planned basis.

Candidates should have experience in steam and diesel plant and in the supervision of craftsmen.

Candidates for all the above posts should be between 27 and 45 years of age. The successful candidates will be required to pass a medical examination and to join such contributory superannuation scheme as the Board may adopt.

All the above appointments will be made within the Grade A.P.T. XI (Metropolitan) (£675 to £800 p.a.) of the National Salary Scales for Gas Staffs.

Applications, stating age, qualifications and experience, should reach the Personnel Officer, Woodall House, 658, Lordship Lane, London, N.22, not later than January 1, 1952.

GAS or CHEMICAL ENGINEER required in Research & Development Dept. of old established firm in Manchester District.

Applicants must hold Academic or Professional qualifications and should have had practical experience of all gasworks processes.

Duties would embrace routine plant sizing and analysis of Chemical Engineering data necessary for the development of new types of plant.

Pension scheme. State fullest details of qualifications, experience, age and salary required.—No. 9989, *Gas Journal*, 11, Bolt Court, Fleet Street, London, E.C.4.

NORTH THAMES GAS BOARD

THE following Drawing Office Staff are required in the Chief Engineer's Department.

1. JUNIOR DRAUGHTSMEN (3) at Beckton, E.6, Slough, Bucks., and Lea Bridge, E.10. Applicants should preferably have had some experience in the maintenance of gas plant and be conversant with the design of steel structures and lay-out of buildings. Starting salary within the range £295 per annum to £535 per annum, according to age, qualifications and experience.

2. DRAUGHTSMEN (2) at Westminster.

(*a*) Experienced in the design, layout and detailing of mechanical handling plant.

(*b*) Experienced in the design, layout and detailing of any of the following:—Coal Carbonising Plant, Coke Oven Plant, By-Products Plant, Pipe Layouts or Steel Framed Structures.

Applicants should be about 30 years of age. Starting Salary within the range £570 per annum to £650 per annum, according to age, qualifications and experience.

All the above appointments are of a permanent nature and pension arrangements will be discussed at interview. Applications, stating age and full particulars of training and experience, should be sent to the Staff Controller, North Thames Gas Board, 30, Kensington Church Street, W.8, quoting reference number 79.

WEST MIDLANDS GAS BOARD

BIRMINGHAM DIVISION.

DEPUTY DIVISIONAL DISTRIBUTING ENGINEER.

APPLICATIONS are invited for the position as DEPUTY DIVISIONAL DISTRIBUTING ENGINEER within the salary range of £850/£1,050 per annum.

Applicants should possess an Engineering Degree, and/or be a Corporate Member of the Institution of Gas Engineers, Mechanical Engineers or Civil Engineers.

The duties will concern the lay-out, installation and supervision of gas compressing plant and auxiliaries, and district holder stations. The design of mains systems will also be entailed. Previous experience in these fields will be an advantage, and drawing office training is desirable.

The successful candidate will be required to pass a medical examination, and to subscribe to such scheme of superannuation as the Board may, in due course, adopt.

Applications, stating age, training, qualifications and experience, together with the names of two referees, should be addressed to the Personnel and Establishment Officer, West Midlands Gas Board, 6, Augustus Road, Edgbaston, Birmingham, 15, to reach him not later than fourteen days after the appearance of this advertisement. Applicants are requested to quote ref. T.P.3 when replaying to this advertisement.

F. H. CURETON,
Secretary to the Board.

PATENTS

KINGS PATENT AGENCY, LTD.
(Director, B. T. King, A.I.M.E., Patent Agent). Advice, Handbook, and Consultations free. 146a, Queen Victoria Street, London, E.C.4. 'Phone: City 6161.

"Gas Service"

The only Journal covering fully all aspects of the sales and service side of the Gas Industry:—

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HOLMES ELEX

DETARRERS

recognised for high efficiency★

EXAMPLES OF RECENT TESTS

CHELMSFORD

Eastern Gas Board

2 million cu. ft. per day detarrer on Mixed Gas.

(a) Inlet Burden 259 grains per 100 cu. ft.
Outlet Burden 1.3 grains per 100 cu. ft.
Gas Make — 2.2 million cu. ft. per day.
★ **Efficiency — 99.5%**

(b) Inlet Burden 318 grains per 100 cu. ft.
Outlet Burden 0.66 grains per 100 cu. ft.
Gas Make — 1.2 million cu. ft. per day.
★ **Efficiency — 99.8%**

LEAMINGTON

West Midlands Gas Board

4 million cu. ft. per day detarrer on Mixed Gas.

Inlet Burden 292 grains per 100 cu. ft.
Outlet Burden 0.24 grains per 100 cu. ft.
Gas Make — 4 million cu. ft. per day.
★ **Efficiency — 99.9%**

LIVERPOOL

North Western Gas Board

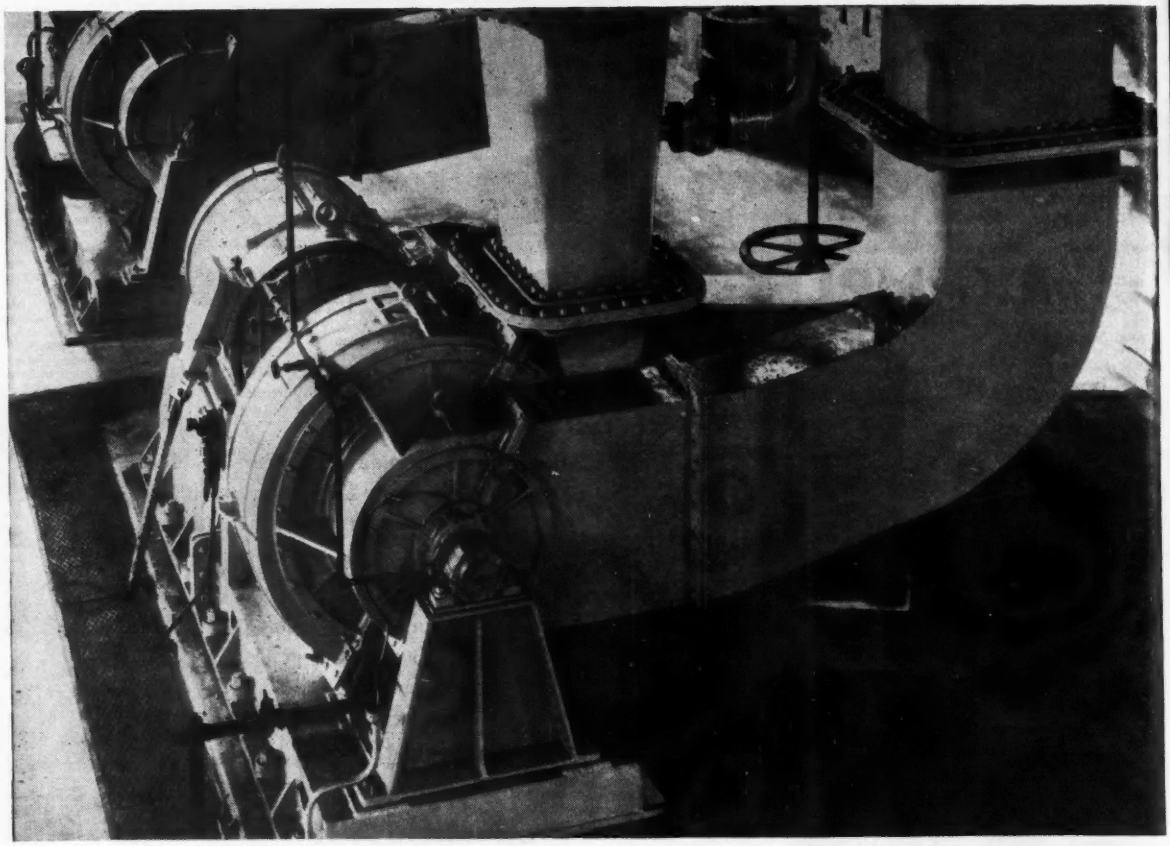
Two 5 million cu. ft. per day detarrers in parallel, on Producer Gas.

Inlet Burden 19.1 grains per 100 cu. ft.
Outlet Burden 0.12 grains per 100 cu. ft.
Gas Make — 11 million cu. ft. per day.
★ **Overall Efficiency — 99.4%**

FOUNDED 1850 HOLMES HUDDERSFIELD

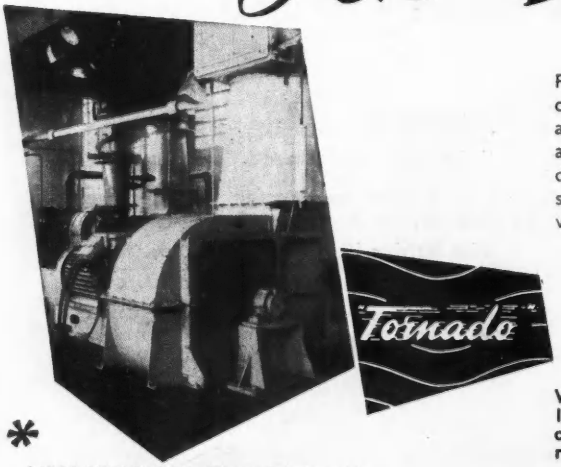
W. C. HOLMES & CO. LTD., HUDDERSFIELD

Telephones: Huddersfield 5280 London, VICtoria 9971 Birmingham, MIDland 6830



Illustrations by courtesy of the South Eastern Gas Board and Messrs. Humphreys & Glasgow Ltd.

Gas Boosting *



*

Part of an installation at the East Greenwich Gas Works for the supply of South London's gas are the "TORNADO" gas boosters illustrated above. Each is capable of shifting over a million cubic feet of producer gas an hour, and each was supplied with cast iron gas tight casings with detachable segments for easy servicing, stainless steel impeller and shaft, self aligning roller bearings and flexible couplings. One of the boosters was arranged for motor drive and the other for steam turbine.

LARGE ILLUSTRATION: *42" type 9 double width double inlet gas boosters.*

DUTY: 1,010,000 c.f.h. producer gas at 60°F. Sp.gr. ·907 (air=1) raised to 104°F. saturated giving 28" w.g. differential over inlet and outlet connections taking 138 H.P.

SMALL ILLUSTRATION: *40" type 15 air blowers.*

DUTY:	*Closed outlet*	*Delivery*
Air quantity	*nil*	*12830 c.f.m.*
Speed r.p.m.	*1480*	*1475*
Static pressure	*15.8" w.g.*	*13" w.g.*
Power absorbed	*13 B.H.P.*	*39 B.H.P.*

FAN ENGINEERING AND INDUSTRIAL GAS EQUIPMENT

We are manufacturing gas boosters which cover a range of from 5,000 to 1,500,000 cubic feet per hour, and if you are concerned with the movement of air or gas, ask us to send you Publication No. 5/8, a survey of the standard range of "TORNADO" high pressure blowing and exhausting fans.

Keith Blackman LIMITED

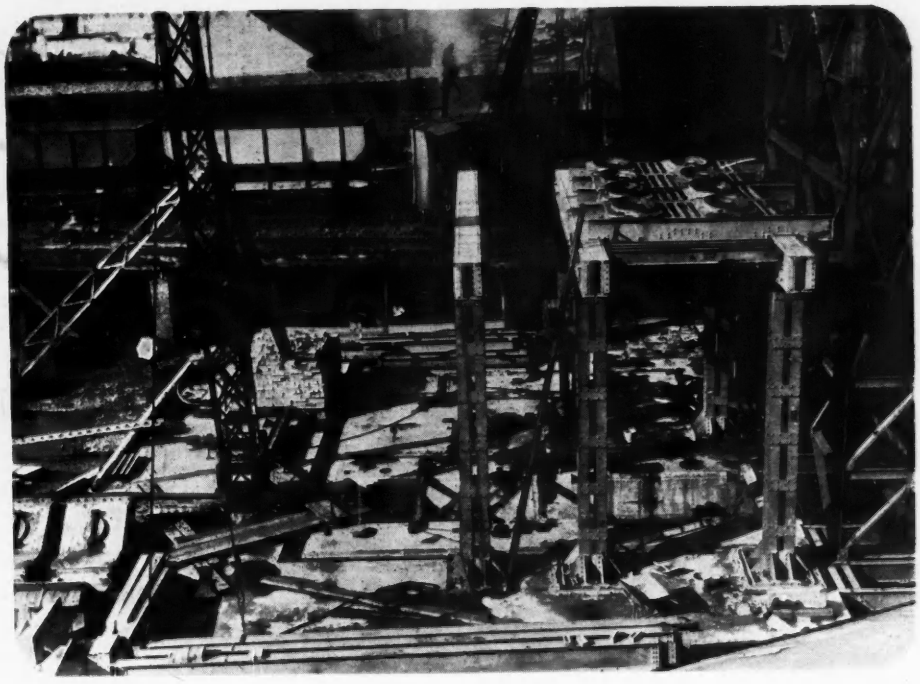
MILL MEAD ROAD, TOTTENHAM, LONDON, N.17

'Phone: Tottenham 4522 (twelve lines). 'Grams: "Keithblac, Norphone, London."

434/1/GJ

Printed by Straker Brothers Ltd., E.C.2, for Walter King, Limited, 11, Bolt Court, Fleet Street, London, E.C.4. Wednesday, December 19, 1951.

Work in progress



BLYTH

Main Stanchions and Girder-Floor for an extension of Glover-West Vertical Retorts.

West's Gas IMPROVEMENT CO., LTD.

MILES PLATTING, MANCHESTER, 10

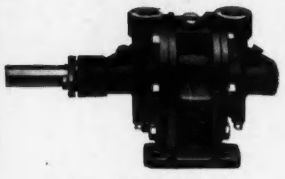
Telephone: COLlyhurst 2961–5. Telegrams: Stoker, Manchester.

London Office: COLUMBIA HOUSE, ALDWYCH, W.C.2. Telephone: HOLborn 4108–9. Telegrams: Wesgasco, Estrand.

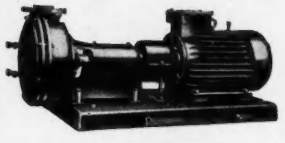
Pulsometer

PUMPS AND FILTERS

Filtration Plant in Gasworks



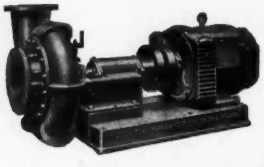
Rotary pump for Oil transfer duties.



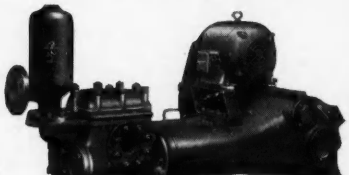
Stoneware pump for Corrosive and chemicals.

"HS" Type—for water services. All heads up to 500 feet.

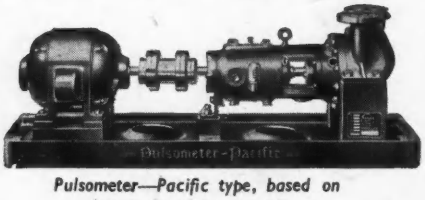
The illustrations show centrifugal pumps for light and heavy oil and liquor duties, stoneware and special-metal pumps for handling acids and alkalis, pumps for circulating and washer duties, for clean water and fire services and for liquids containing abrasives.



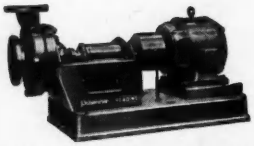
Slurry pump for coal washing and abrasive liquids.



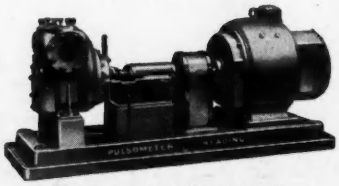
Reciprocating pump of modern design for Gas Works.



Pulsometer—Pacific type, based on latest American practice.



"JA" & "JB" types for high temperature water circulation.



Self priming centrifugal pumps.

PULSOMETER ENGINEERING Co. Ltd., Nine Elms Ironworks, READING